INTENSITY OF DEVELOPMENT AND LIVABILITY

OF MULTI - FAMILY HOUSING PROJECTS

DESIGN QUALITIES OF EUROPEAN AND AMERICAN HOUSING PROJECTS

TECHNICAL STUDY TS 7.14

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PREFACE

Multiple housing has been a long time interest of mine. As an architectural student, I had the task of designing a large, urban housing project for New York City. During the course of this assignment, and increasingly in subsequent years, I became aware of the problems of planning a site for a group of identical residential buildings and the general poor quality of much site planning in the United States.

The construction of multiple housing has taken on increased significance as an alternative to low-density urban sprawl, the result of continued urban expansion. Multiple housing developments and the problems associated with them are attracting the attention of many architects, city planners, sociologists, economists and others concerned with urban affairs. The weight of documentation and the number of studies suggest that this area is a major concern today.

Many well-designed multiple housing projects are being built in cities throughout the world. I traveled in Europe and the United States during the summers of 1961 and 1962, respectively, to see some of them. Based on these firsthand observations I have attempted in this study to identify some of the qualities that distinguish good housing projects and to determine the significance of regulations of intensity of site development on the livability of housing areas. I hope that these findings will be useful in the evaluation of multiple housing and standards of site development, and ultimately that they will contribute to an improvement in housing design.

My travels and this study were made possible through the support of a number of organizations. In 1961 I received a summer research

fellowship from the University of Illinois and a travel grant from the American Institute of Architects which together enabled me to undertake the initial portion of my research, the study of European housing projects. The University of Illinois further supported my research work during the 1961-62 academic year in the form of assistance in the translation of documents and the processing of graphic materials. The United States Federal Housing Administration sponsored my study of the American housing examples. This latter phase was also made possible through the cooperation of the United States Housing and Home Finance Agency, the United States Public Housing Administration, the United States Urban Renewal Administration, and the American Institute of Architects.

In a project of this scope it is almost impossible to mention all of the individuals who have contributed their time, patience and professional skills. In a separate appendix I have named those persons who were particularly helpful to me during the course of my travels. I would also like to acknowledge my indebtedness to the following individuals whose assistance was invaluable: Mrs. Marie McGuire, Commissioner, U.S. Public Housing Administration; Mr. Thomas B. Thompson, Assistant Commissioner, U.S. Public Housing Administration; Mr. Frederick O'R. Hayes, Assistant Commissioner, U.S. Urban Renewal Administration; Mr. Frederick McLaughlin, Jr., Community Planner, U.S. Urban Renewal Administration; Mr. Neil A. Connor, Director, Architectural Standards Division, U.S. Federal Housing Administration; Mr. James R. Simpson, Architectural Standards Division, U.S. Federal Housing Administration; Mr. Bernard Craun, Architectural Standards Division, U.S. Federal Housing Administration; Mr. Matthew

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CHAPTER ONE: INTRODUCTION

Housing masses of people in urban areas has long been one of man's persistent problems. Today the problem is becoming more acute as a result of continual population growth, urban sprawl, diminution of land resources in metropolitan areas, and inadequate choice of housing for many families.

In the United States, government at all levels, private groups and agencies, and individuals are studying the problem and attempting to solve it. Multiple housing in particular is being examined on a broad front by professionals from many fields, among them architecture, city planning, sociology, social work, health, welfare, and public administration. The government plays an important role through provision of loans, grants, and mortgage insurance; review of the design of urban renewal areas and public housing; and enactment and enforcement of housing codes and zoning ordinances. Many present day housing regulations are outgrowths of efforts to eliminate some of the notorious congested, unsanitary, and unsafe conditions of city tenements of the nineteenth and early twentieth centuries. Aimed at providing better housing and promoting the general well-being of occupants, regulations have been adopted which specify such characteristics as minimum interior space, maximum occupancy for each dwelling, and height and spacing of buildings. These standards and others influence the intensity of development of housing today. One of the main objectives of this study is to determine the effects of intensity of development on the livability of housing projects.

Controls have not necessarily netted better housing. The criticism has been made that the original objective of improving the housing

environment has become lost in a proliferation of controls which have tended to standardize mediocrity. According to an article in the March, 1962, issue of The Architectural Forum, the demand for multiple housing

> ". . . is being met almost entirely without imagination. . . newspapers throughout the country . . . show block after block of deadly, uninspired, and utterly repellent apartment projects put up by what appears to be the same architect and the same builder, operating, it seems, a nationwide syndicate."[1]

In recognition of the need to overcome the monotonous appearance of many projects, the United States Public Housing Administration is attempting ". . . to bring more imagination into the design and management of low rent public housing."[2] The dissatisfaction with past accomplishments, the review of current practices, and the growing concern of both public and private groups to improve multiple housing offer promise for the future.

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[1] "Back to the City - But is it Worth the Trip?" Architectural Forum, Vol. 116, No. 3, March, 1962, p. 78.

[2] Martin Arnold, "New Ideas Sought in Public Housing," The New York Times, November 26, 1961, p. 86.

PURPOSE AND SCOPE

The three-fold purpose for undertaking this study was as follows: 1) to observe at first-hand a wide range of multiple housing projects; 2) to identify aspects of site design quality; and 3) to determine the influence of housing intensity on these specific aspects of design and on project livability in general.

The study originally was intended to analyze only European housing but was expanded to include American examples as well. The volume of current construction and the tradition of multi-family housing make Europe a rich area for study. According to a 1960 United Nations Commission report, "...In most eastern European countries housing projects in industrial and urban centers are almost entirely of the multi-dwelling type."[3] In England and Wales, 41 percent of local authority housing consists of two-dwelling or multi-dwelling units.[4] The 1961 report indicated

> "There is a general trend in most western European countries towards increasing the proportion of the multi-dwelling type of construction."[5]

For the same year it noted that in the United States 78 percent of the new dwellings were single family houses.[6] The need to study the experiences and accomplishments abroad is frequently voiced.

> "... studies of urban development and governmental efforts are needed throughout the country and overseas to highlight common and unique features. Today, the same types of mistakes tend to be made over and over again, in part because we do not have the knowledge of what is applicable 'across-the-board' and what is unique in each community. It is important

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[3]United Nations, Secretariat of the Economic Commission for Europe, European Housing Trends and Policies in 1959. (ST/ECE/HOU/1) (Geneva, 1960), p. 17.

[4]*Ibid.*

[5]United Nations, Secretariat of the Economic Commission for Europe, European Housing Trends and Policies in 1960 (ST/ECE/HOU/2) (Geneva, 1961), p. 13.

[6]*Ibid.*

that we develop techniques by which communities can learn from each other.... Experience abroad in urban development and policy innovation might be very suggestive in this comparative framework."[7]

My aim was to survey a wide variety of housing projects with the hope that findings based on a large sampling of diverse housing might have universal application and not be limited to a particular geographic setting. The end product of this study is not the presentation of ideal design solutions. Rather, the conclusions are limited to broad principles, an appreciation of which can aid in the appraisal of multi-family housing projects, and to some specific observations regarding current design practices.

LIMITATIONS

In any over-all appraisal of housing livability, many factors, design and non-design alike, must be taken into consideration. Among the most significant non-design factors of housing are environment, cost, and social goals. This study, however, is limited to questions of physical design. The presence of certain physical characteristics is no automatic guarantee of achieving non-design objectives, but the absence of certain physical characteristics may prevent the attainment of non-design objectives, particularly social ones.

I have further limited this study to an examination of site plans - to exterior spaces only. I have assumed that the interior spaces of all the housing I visited met minimum requirements for healthful living, recognizing, of course, that such minimum requirements vary with different economic and cultural groups. During the course of my field observations, I visited enough apartments to justify this assumption. Every apartment had adequate space by minimum American standards. Where it was not possible for me to inspect the interiors, I have been able to study floor plans to confirm this observation. All the apartments had separate sleeping rooms for children and adults; all had separate living rooms; and all had private cooking and sanitary facilities and some storage space. While outdoor areas sometimes become extensions of indoor areas (especially of low

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[7] Harvey S. Perloff, A National Program of Research in Housing and Urban Development (Washington: Resources for the Future, Inc., 1961), p. 20.

buildings), or are used to supplement inadequate interior space, I believe that the two areas can be studied and evaluated separately. Furthermore, I believe the adequacy of interior space (size, and sanitary and cooking facilities) is more closely related to economic and cultural differences than are the characteristics of site planning and exterior spaces. Certainly, provision for outdoor recreation, automobile storage, separate pedestrian and vehicular traffic ways, and community facilities can be analyzed independently of building interiors.

Since this study involves an appraisal of design, it is necessarily subjective in nature. The findings are undoubtedly qualified by my own aesthetic values. In my travels I asked to be shown examples of only the best recent housing. Hence the actual selection of sites was not made by me, but by housing officials in the cities I visited. I tried to apply the same criteria to all housing I investigated. In these ways - leaving the selection of sites to local experts and judging each site by a uniform set of criteria - I attempted to minimize the subjectivity of my research. From city to city, country to country, and even site to site, however, differences were apparent which made it difficult to apply fixed standards. Differences prevailed in the following: the role of government; the role of the designer; the basic objectives of the housing; the scope of housing codes and ordinances; the impact of history, tradition, cultural and economic factors; the location and size of projects; the age and stage of completion of buildings and landscaping; and weather and climate. Nowhere were conditions identical.

METHODOLOGY

This study was undertaken in three stages - the selection of European cities to be visited, the field observations and collection of data during the summer of 1961, and the subsequent analysis of these materials and the presentation of findings. In 1962 the study was expanded to include three American cities, which were visited during the summer of that year.

After considering time, location and volume of new housing construction, especially of projects not already well reviewed in the United States, a European itinerary was determined with the advice of professional colleagues. In the main it consisted of capital cities, national and provincial, where usually the greatest amount of building is taking place, and where offices of persons responsible for the design and/or administration of regulations affecting site planning and building

intensity are located. The 12 European cities I visited are as follows: Amsterdam, Rotterdam, and The Hague, The Netherlands; Hannover, Germany; Vienna, Austria; Belgrade, Yugoslavia; Athens, Greece; Rome, Milan, and Turin, Italy; Paris, France; and London, England.

The choice of American cities was made through consultation with housing officials in Washington. The selection of St. Louis, Missouri, San Francisco, California, and New York, New York was influenced by their different geographic settings and their active multiple housing programs. From my knowledge of multiple housing in a number of American cities, I believe that the projects I visited in these three cities are fairly typical of the range of current site planning practices. In both Europe and the United States where there are a number of outstanding housing projects and creative designers, other cities might also have been selected. However, the cities that I did visit contained the great variety in housing projects that I had hoped to see.

Through advance correspondence, I established professional contacts and arranged for appointments in each city. Local experts (architects, planners, engineers, government housing officials, etc.) everywhere made the selection of sites, based on my desire to see what was considered the best examples of new housing. These people also provided me with information about local policies which influenced site planning - particularly questions of design procedures and the impact of regulations that control the intensity of housing site development. In our talks they explained local housing practices, housing needs of their people, financial policies, customs, cultural and historic housing preferences, and the unique qualities of the sites themselves. Their familiarity with these conditions and influences was another reason why I deferred to the advice of native experts in each city in the selection of sites.

I visited over 80 projects in 14 cities. These visits either followed or preceded (sometimes both) talks with local people. At each project I made notes of my observations and took a great number of photographs - a total of over 800 for the entire study. I tried to photograph the projects from the vantage points of the occupants but not to record dramatic scenes. At a number of projects I took pictures above ground level from public galleries, private balconies, and windows of stair towers. These over-all site views help to bring out many site qualities which are difficult to read in plans. My notes include comments on sites and also the character of the development surrounding the individual projects and the location of the project within the city.

I did not interview, either directly or through an interpreter, any of

the occupants of the housing that I visited.

Although I did not seek out information from the tenants, they were anxious to volunteer it at a number of projects. In Rome a tenant commented that he thought his housing was "the best in the world!" From my point of view this project was one of the poorest designed I saw. During the conversation this man revealed that prior to moving to his present quarters, he, his wife and six children had shared a five room apartment with two other families. By comparison his new apartment was luxurious. He was not concerned that the view from his windows revealed identical buildings in all directions or that there was inadequate play space for his children on the site. These factors are important to a designer, and may become important to the Roman tenant after he has lived in the project for some time.

I was able to procure site plans for 60 of the projects, including all of those significant to this study. These plans appear in Appendix One of this report along with those for a few developments still on the

drawing boards but which have significant details or site planning characteristics that are departures from past practices. All of the plans have been reduced to one of four scales for comparative purposes. In addition to the site plans, comparable statistics about the intensity of multi-family housing development and other pertinent information is given for the 60 projects.

I reviewed the large number of publications that I acquired in the course of the study and had them translated where necessary. The most pertinent ones are listed alphabetically and appear as Appendix Two of this report.

The final step, the analysis of data and statement of findings, constitutes the core of this research report. I have utilized site plans, photographs, published reports, correspondence, and opinions of colleagues and contacts I met throughout my trips in arriving at these findings, but the opinions as finally expressed are my own.

CHAPTER TWO: MEASURES OF INTENSITY

The intensity of multi-family housing[1] can be measured a number of ways. In this report it is measured by five of the most commonly used methods - density, coverage, floor area ratio, building type and size, and building spacing. These are defined and discussed in this chapter. Also mentioned in this chapter are some site features which are indirectly related to the intensity of housing development. Intensity measures and site characteristics are listed for each housing project in Appendix One.

The intensity of housing is controlled and, presumably, the livability of housing is improved by the enforcement of minimum and maximum standards for density, coverage, floor area ratio, building type and size, and building spacing. However, among housing experts there is considerable disagreement over the effects of these standards on livability.

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[1]As used in this report, multi-family housing means the following: any type of structure designed for occupancy by three or more families. A multi-family housing project is a group of multi-family building types on a single site. The project site may also include some single family and/or duplex units provided that these units represent only a very small proportion of the total number of buildings on the site. For example, a row house development that includes a few detached units scattered on the site is considered a multi-family housing project. On the other hand, a high-rise building located on the same site with a predominant number of single family units is not considered a multi-family housing project.

DENSITY

Density of residential development is the ratio of occupancy (dwellings, persons, families or habitable rooms, etc.) to land area (acre, hectare, or square mile, etc.). It can be expressed in different ways, according to the choice of terms for occupancy or land area. Of all measures of intensity, density is the one most commonly accepted as reflecting the livability of multi-family housing. Many of the exposés of slum conditions, for example, have expressly stated that the poor livability of slum housing is the result of high densities.

In the United States the most consistently used ratio is number of dwellings (or families) per acre. Usually no distinctions are made regarding the size of individual dwellings and/or number of persons occupying them. Project size acreage is generally expressed in net acres. Areas devoted to commercial activities, community facilities, public recreation, and major roads are excluded from net acreage computations but these are included in gross acre computations. The most frequent variation in the expression of density consists of substituting persons for dwellings. This is often used when the housing is not occupied by families of average size. For instance, in stating the density of a dormitory group, persons per acre is more meaningful than either dwelling units (since the latter are frequently single sleeping rooms) or families (which might consist of one person).

In Great Britain the ratio of habitable rooms per acre is commonly used. Bedrooms, living rooms, and dining rooms are considered habitable rooms, but kitchens, bathrooms, and accessory storage

rooms are not. The latter group are usually provided irrespective of dwelling size, but the former ones vary in number with the size of a family. This British measure takes dwelling size variation into account directly and number of persons indirectly since the number of habitable rooms is generally proportionate to family size.[2] The relationship between number of rooms and persons occupying them was most consistent in the publicly assisted housing I visited since occupancy of these projects is generally controlled by government agencies. In high cost private multiple housing, there may be considerable discrepancy between design densities and occupancy densities.[3]

There are many additional ways of expressing density. Two examples are number of persons per square mile and number of children per acre. The former can be used to judge the adequacy of community facilities and the latter to plan for schools and recreation areas. These ratios are useful in the study of such special characteristics, but are not very reliable measures of the general livability of a housing project. Persons per square mile might be a combined average of high and low density housing and would not indicate the degree of crowding in any individual block or blocks.

In this study I express density as dwelling units per net acre for three reasons: 1) most of the statistics were available in these terms; 2) this ratio is frequently employed in United States housing literature; and 3) this ratio is rather easily converted to other ratios. The statistics for projects I visited reported occupancy as dwelling units (almost always the same as number of families). When figures for number of persons were obtainable, as in the case of many public projects, I also computed density in terms of persons per net acre. My calculations reveal that the average number of persons occupying a dwelling unit is similar in Europe and in the United States.[4]

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[2] Two publications of the British Ministry of Housing and Local Government explain further the application of this density measure. <u>The Density of Residential Areas.</u> London: H.M.S.O., 1952, and <u>Flats and Houses 1958 - Design and Economy.</u> London: H.M.S.O., 1958.

[3] In several of the projects included in this study, two-bedroom apartments which could have accommodated three and four person families with comfort were occupied by only two persons. This, however, was the exception.

[4] The average family size for 26 European projects is 3.8. For 13 U.S. projects the average family size is just under 3.5.

The dwelling units per acre ratio is so widely used and is so familiar to housing specialists that the mere mention of a figure conveys an immediate impression of site characteristics. My use of it facilitates comparisons between this and other studies of housing.

It is rather easy to convert this density ratio to other ratios. Dwelling units can be changed to persons by assuming an average family size, or to habitable rooms by assuming an average dwelling unit size. Likewise, acres can be converted to hectares. Such a conversion is necessary in order to compare American and European housing.

In this study net acreage proved to be more reliable for comparative purposes than gross acreage because of the variety of community facilities built on the same site with housing. My net acre calculation includes areas devoted to housing, private outdoor space, communal outdoor space for use by project occupants, interior roadways, and parking space. I have excluded bounding roads and major community facilities such as schools, churches, shops, etc., and their associated spaces. Where the information was available, I have noted the gross site acreage for the projects, but I have not computed gross densities.

The two components of the density ratio, occupancy and size of site, are also meaningful when considered independently. Occupancy is a measure of activity on a site and is also significant in an appraisal of the adequacy of community facilities. The provision of schools, recreation space, shops, and similar facilities is directly related to number of persons. Site size, as a separate component, influences the quality of a housing project. It is size more often than density which causes monotony, one of the most objectionable characteristics of housing projects. While density can be described in a straightforward fashion, degrees of density are difficult to state in absolute terms. What constitutes <u>high</u>, <u>medium</u>, or <u>low</u> density is relative to a number of factors, namely a country's or city's tradition of residential development, location of housing, and building type. For example, what is high density housing on the fringe of a city may be considered medium or even low density at its core. Fifteen dwelling units to the acre is regarded as high for single-family, detached structures, medium for row houses, and low for multi-story structures. The density of the multi-family projects I visited ranged from 6.5 dwelling units per net acre to 166 dwelling units per net acre. The use of <u>high</u>, <u>medium</u>, and <u>low</u> in this report is related to the range of densities that I observed.

COVERAGE

Coverage is the percentage of land occupied by structures. The higher the coverage, the less open land for outdoor recreation, gardens, parking spaces, and other needs. The lower the coverage, the more unbuilt land available for outdoor needs. There is some disagreement over what buildings should be included in the computation of site coverage. One method includes all buildings, residential and non-residential, on the theory that all buildings, regardless of use, take up ground space. In such cases, gross acreage is used for site area. Another method includes only residential buildings because these are the structures around which open space is most crucial. This method utilizes net acreage in the computation. For this study I have used net acreage and residential buildings primarily because this data was available. It is possible to compute coverage in a different manner with the statistics that I include in Appendix One. Here gross acreage and non-residential buildings are also noted for the projects, if this information could be obtained.

Coverage is a somewhat misleading measure for large projects with a variety of building types because it is a percentage for the entire project and may not represent the coverage of any specific building group. It would be more accurate to measure coverage separately for each sub area of similar building types. The coverage figures in Appendix One are either for the entire site (for projects whose buildings are all of the same general type), or for the sub area with the highest coverage (for projects whose buildings differ in type).

FLOOR AREA RATIO

Floor area ratio is defined by the American Public Health Association as "...the total floor area of all stories used for residential purposes, divided by the area of residential land."[5] It is a measure of building bulk, and is often preferred over coverage because the latter fails to reflect above-ground development. On the other hand, floor area ratio does not reveal the amount of open space available on a site. A one-story building that covers 100 percent of a site and a two-story

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[5] American Public Health Association - Committee on the Hygiene of Housing. Planning the Neighborhood. (Standards for Healthful Housing Series.) Edited by Allan A. Twichell. Chicago: Public Administration Service, 1960, p. 40.

building that covers 50 percent of a site both have a floor area ratio of 1.0. Because neither floor area ratio nor coverage alone describes the characteristics of residential development, they are often used in combination.

Another frequent combination is floor area ratio and usable open space. How space is used is often more critical than how large it is. Playgrounds, private outdoor space, and passive recreation areas are included in the measurement of usable open space; driveways, parking lots, and service areas are not. Another consideration that is not taken into account by floor area ratio regulations is variation in the amount of interior space per person in different housing developments. Minimum interior space requirements are controlled by other codes. Floor area per person usually varies according to income. However, location, not income, sometimes determines space. Actual interior space per person may be less in high rent housing in the center of a city where land costs necessitate high density than in middle and low income housing on the fringe of a city where land costs are usually substantially lower.

If the residential floor area were first divided by the number of persons occupying the space before being divided by the site area, the resulting figure would reflect the actual bulk of space per person and not building bulk.

In this study I have computed floor area ratios with the area of residential land expressed in net acres. I have departed from the A.P.H.A. definition by including the entire floor area of a building and not merely the residential floors. The total amount of floor space was hard to calculate for some of the very large projects because of the great number of buildings and the range of building heights. For such housing the floor area ratio shown in Appendix One refers only to a portion of the whole site - that portion where floor area ratio is the highest.

BUILDING TYPE AND SIZE

Building type and size refers to the bulk of individual residential structures. This measure of residential density is most commonly regulated through zoning ordinances which specify, according to districts, the type (high-rise, row house, garden apartments, etc.) and size (feet, stories, etc.) of buildings. Controls by type may specify the number of dwelling units per building as well as the type of building.

For example, garden apartments may be permitted in a district provided that no more than a given number of dwelling units are included in any one building. Control by size may specify the length as well as the height of buildings. Regulations of type and size also may state the number of buildings permitted on a site. This limit is intended to prevent overdevelopment, particularly to avoid the construction of a large number of identical, high-rise buildings on a single site.

Building size controls are intended primarily to insure that all residential units have adequate sunlight and fresh air, at least that no tall or long structures are built to block out light and air. Building type controls attempt to insure that housing is built which meets the needs of occupants and that the buildings fit into their surroundings. One of the liveliest controversies in housing circles centers upon the appropriateness of multi-story housing for families with children. Advocates of tall buildings point out that high-rise structures free more ground area for recreational use than do low-rise buildings at the same density. Those who oppose high-rise buildings for families with children claim that outdoor areas must be immediately accessible from individual dwelling units to be usable. It is not the purpose of this study to proclaim the superiority of a particular housing type, but rather to indicate ways in which the intensity of residential construction is controlled and the effects of these controls on the over-all livability of housing projects.

There are three general categories of residential buildings according to height: low, walk-up and multi-story or high buildings. Low buildings are one and two stories in height. Walk-ups are three and four stories. There are exceptions, particularly in Europe where it is not uncommon to have walk-ups of more than four floors. However, these are decreasing in number with a greater and greater use of elevators. High or multi-story buildings are over four stories. In Appendix One, I have recorded the number of buildings on each project site and their heights in stories. From the site plans it is possible to ascertain the length and width of individual structures.

SPACING

Spacing is the measure of the distance between buildings which face one another. Of all regulations that control building intensity, spacing regulations have probably been in use the longest. There are records of Roman laws that specified the maximum height of buildings in relation to the width of the streets on which they faced. Spacing limits,

as well as size limits, are intended to insure adequate light and air for the interiors of dwelling units. Since the adequacy of light and air is also influenced by the height of a building opposite, standards often relate spacing to heights of structures. An example of such a standard follows. "As a rule of thumb, in northern latitudes of the United States, continuous parallel rows of building with north-south exposure (on ground level) should be spaced two to two and one-half times as far apart as their vertical walls are high."[6] Precise wording vary but the goal remains the same. However, spacing regulations do not take into account differences in height of opposing buildings and arrangement in other than parallel rows. Regulations can be worded to set spacing in terms of combined heights of buildings in situations when heights differ. It is more difficult to determine spacing standards for buildings that are not parallel. In such cases it is essential to study the details of site arrangement and the internal arrangement of rooms before setting spacing. In some cities, regulations are written in terms of the size of windows and the angle of light obstruction with respect to opposite structures. These regulations restrict how many light units should penetrate what distance into designated rooms. Accordingly, windows must be certain minimum sizes and opposing buildings certain minimum distances and maximum heights.

The difficulty of devising standards that are applicable to all situations is clear to anyone who has tried to write intensity regulations which are specific in provisions for light and air, guard against overdevelopment and, at the same time, are flexible enough to permit imaginative site planning. Ideally, standards should guarantee the objectives which motivate their use yet permit design freedom. In this study I have measured only the distance between the two closest parallel building faces. Detailed study of an entire site, including solar orientation and building spacing in relation to heights, would be necessary in order to determine the adequacy of spacing.

OTHER INTENSITY MEASURES AND PROJECT CHARACTERISTICS

Some additional measurable characteristics of the projects I visited are recorded in Appendix One. These include parking facilities, balconies, communal recreational facilities, non-residential site uses, and distance to city center. Parking space adequate for the needs of project residents often puts a very great demand on open space, partic-

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[6] Ibid., pp. 30-31.

ularly that of high density developments. A site on which parking is provided for all units generally appears much more crowded than a site with parking space for only a fraction of the dwelling units. Many European developments provide substantially lower parking spaces than do comparable American ones. A comparison of site plans would not be accurate without considering parking facility provisions. In Appendix One I have indicated the number of parking spaces for each project when this information was known. I have also noted the kind of parking provided: surface lots, underground garages, etc.

Balconies supplement open space and are of two types: private spaces that open directly from individual dwelling units; and communal spaces at an intermediate level or on roof tops. I have included balconies in this discussion of intensity because they are a measurable characteristic of buildings and in addition, their inclusion directly influences the intensity of ground space use. Communal recreation facilities and other public facilities on-site are often used by non-residents

of a project. The existence of play grounds, sports fields, shops, community buildings, etc. is an indication of the intensity of site activity, especially when these are deliberately planned to serve both resident and non-resident needs.

The location of a project, both with respect to the center of a city and to surrounding development, affects the intensity of site construction and site traffic. I have already discussed the importance of location and intensity of construction in the sections dealing with density and floor area ratio. The distance from each project to the center of the city is given in Appendix One. Also listed for each project are its surrounding land uses. These uses influence the intensity of site traffic in at least two ways. The pedestrian paths on a site surrounded by commercial development are frequently used as shortcuts by shoppers. An outlying housing project with numerous non-residential facilities on its site and bordered by other residential development often attracts automobile traffic from surrounding areas.

CHAPTER THREE: ASPECTS OF QUALITY

The livability of multi-family housing can be analyzed from both social and physical points of view. Both vary greatly with different tenants of a project and are, therefore, somewhat difficult to pinpoint. While respecting the importance of social factors, this study deals only with physical ones.

In physical terms housing can be studied at a number of levels: the individual dwelling units, residential building, cluster of buildings, total project site, and site as part of a larger urban environment. In discussing housing quality, I make reference to all of these scales. The significance of scale in housing design can be illustrated in part with the following two examples. First, a single building on its own piece of land might be a highly livable structure, but when the same building is repeated in rubber-stamp fashion creating a row of identical buildings, its quality is greatly altered. The building design is the same but repetition causes an important scale change. Second, a housing project site design may in itself be of fine quality but if this site is located adjacent to a factory that contaminates the air with smoke and fumes, the livability of the project examined in its total environment is reduced. Again, scale is the difference.

For the purpose of this study, livability refers only to the external physical qualities of a housing project at all scales. It takes into account such factors as spaciousness, site characteristics, visual appearance of buildings, provision of community facilities (schools, recreation places, shops, churches, etc.) and the environment of

the project - the development of immediate surroundings and location in an urban area.

In this chapter I examine the physical concept of livability, identifying it by twelve specific aspects of housing quality which I illustrate with some examples of the housing that I visited. The aspects of quality are: privacy, usable open space, individuality, diversity, location, proximity to community facilities, safety and health, circulation, automobile storage, blending of new housing into surroundings, site details, and views from and to a site. I am not prepared to say that any one quality aspect is more or less important than any other, but individually and collectively they contribute to physical livability. Together they do not guarantee housing livability, but if they are absent in large measure, failure is almost certain.

I have arrived at this set of aspects of quality through training and experience, study of housing literature, travel, and observation. The photographs are not the only examples that I could have included, but they are fairly typical and show characteristics that are common to many housing projects.[1]

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[1]The location indicated for projects is the metropolitan area where the project is located and not the precise city jurisdiction. A more accurate description of location is given in Appendix One.

PRIVACY

Visual and auditory privacy are essential for all housing. In single-family housing, privacy exists by virtue of the separation of units. Privacy in all forms, visual and auditory, indoor and outdoor, is more difficult to achieve in multi-family developments where units are close together. Attention to building design and construction, and site planning can help to overcome some of the inherent "togetherness" of multi-family housing. It is primarily the privacy provided by site planning with which I am concerned here.

Non-residential activities that adjoin housing can impinge on privacy as much as neighboring residential units. For example, housing in the central area of cities, or housing mixed with non-residential uses, must be planned in such a way that these adjoining uses do not make the residential areas public places.

For some urban dwellers privacy is synonymous with anonymity, but anonymity does not mean that all windows and doors must remain shut, blinds and curtains drawn, and all activities must take place within the confines of the dwelling unit. The opening up of a dwelling unit to views and outside spaces should be possible without sacrifice of interior privacy.

The illustrations show examples of site planning where the aspect of privacy has been considered. No examples are included that show internal privacy, particularly sound, although this, of course, is of great importance in housing design.

Fig. 1
St. Louis: Tower Hill Manor

Privacy for these units is achieved by means of screen walls. The construction permits air movement, but visually blocks off neighboring spaces.

Fig. 2
Amsterdam: Geuzenveld

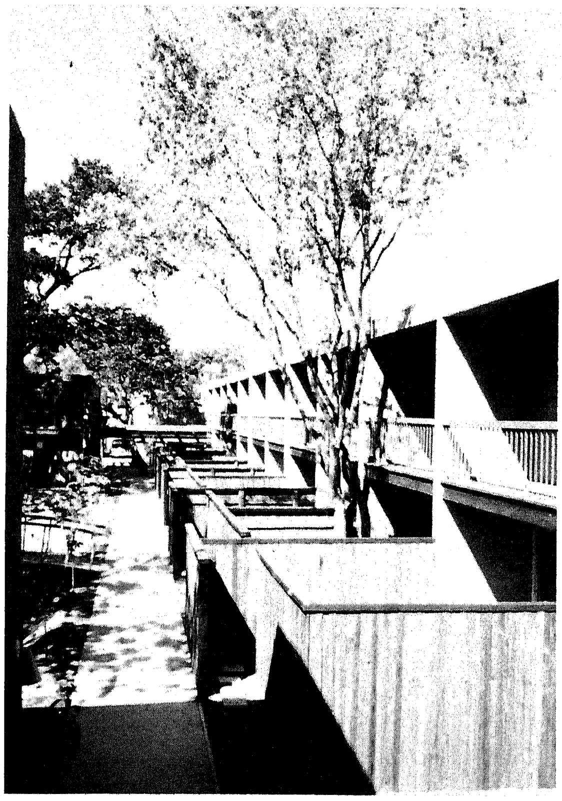
The use of heavy landscaping close to the building provides privacy for ground floor activities, and separates the individual open spaces from the communal green. The second floor balconies supply private outdoor space at that level.

Fig. 6
Rotterdam: Zuidwijk

The recessed balconies on this building are shielded from view of the other balconies - thus assuring more privacy than balconies which project out from the face of the structure. The raising of the ground floor apartments one-half level above the public walkway is another design feature to increase privacy for that floor.

Fig. 7
San Fransicso: Creekside

Private space is provided at both levels of these two-story units. At ground level an outdoor room, with enclosing walls, is an extension of indoor private space. On the second floor a protected balcony runs the entire length of the dwelling unit.



USABLE OPEN SPACE

Usable open space for active and passive recreation, for gardens and landscaped grounds, for cooking and eating, and for many other outdoor activities is needed for multi-family housing. No fixed amount of open space can be prescribed for all housing projects, since adequacy of this or any space is related to the particular needs of the housing occupants. For example, recreation space needs are different for families with children, than for families without children. In housing for the aged, spaces for passive recreation and not active play areas are needed.

Generally open space is at ground level. However, not all space at this level is usable. Parking lots, loading areas and driveways, for instance, are not. Supplementary usable open space can be provided above ground in the form of balconies and roof terraces.

The economic status of the occupants must be considered in the planning of site open space. Families in the upper income brackets can afford, and often prefer, outdoor space at some distance from their dwellings - country clubs, summer homes, seaside or mountain resorts away from their city apartments. Lower income families must be provided with greater amounts of recreation spaces immediately accessible to their dwellings since they frequently cannot afford distant ones.

Fig. 8
San Francisco: Aldea San Miguel

A sand box is a small recreation area in scale with the very young children who use it for play. The children can be supervised by adults who relax on the bench - a passive recreation area.

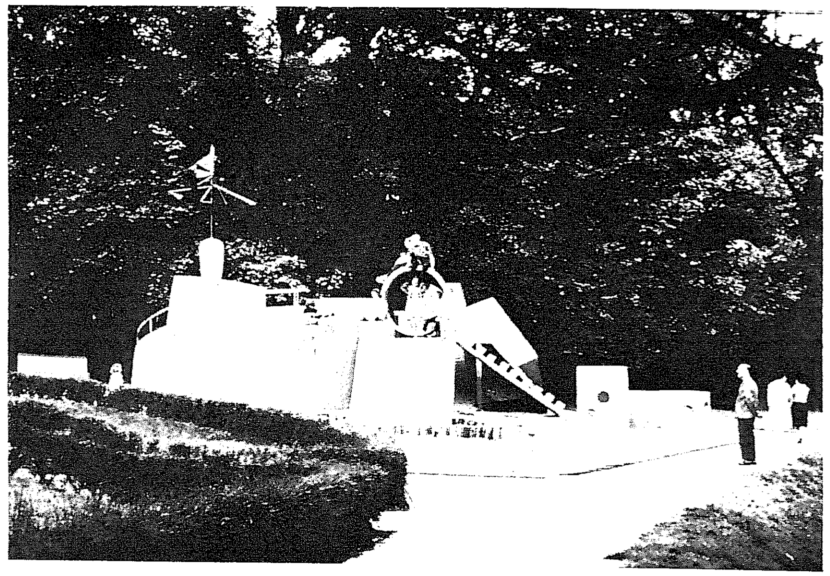


Fig. 9
Paris: Vaucresson

Playground equipment can be either very elaborate or extremely simple, but in both cases it was designed for the particular age group who use it. The adequacy of these play areas is determined by the number of young children who live at the project and not by any fixed percentage of site size.

Fig. 10
Amsterdam: Slotermeer

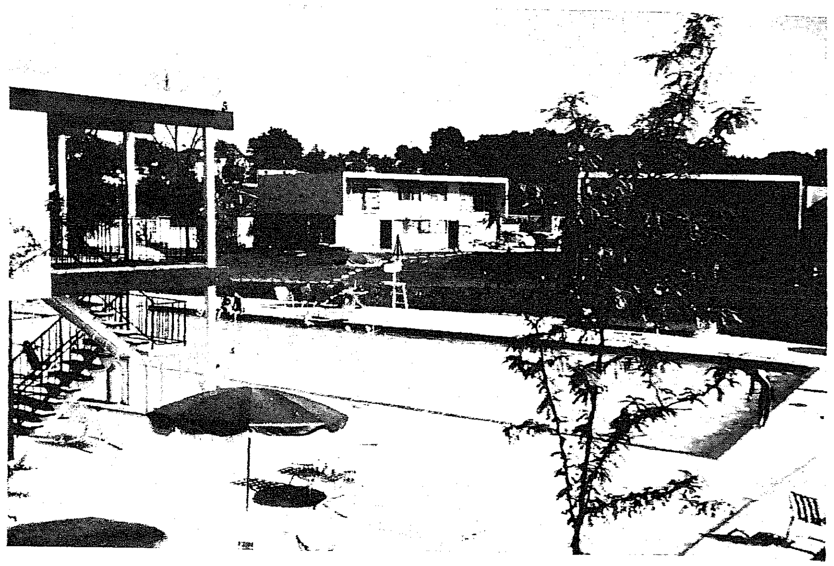


Fig. 11
St. Louis: Park Towne

Adults and children alike make great use of swimming pools built for communal use on the sites of multi-family housing developments.

Fig. 12
Vienna: Pointengasse-[illegible]

Passive and active recreation areas are needed. This space is enjoyed by elderly people who can sit on the benches and read or visit with friends. Its usability is enhanced by the presence of landscape elements which offer protection from the bright sun.

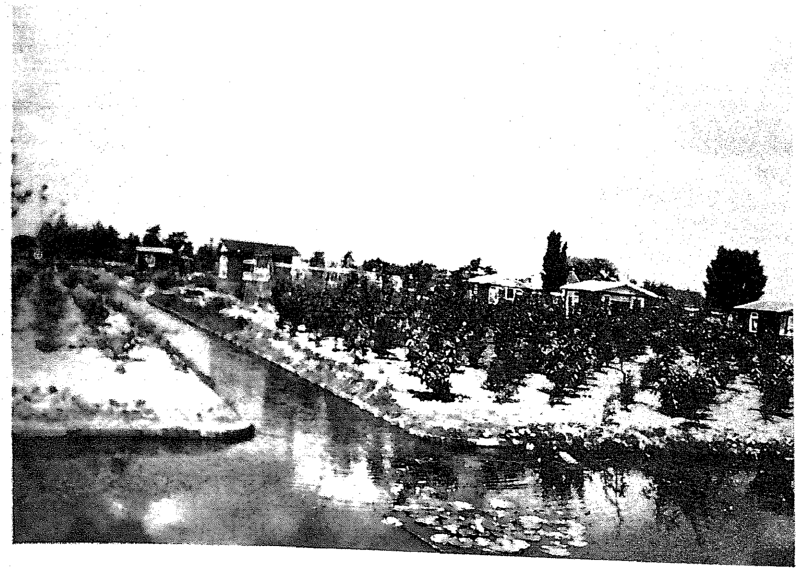
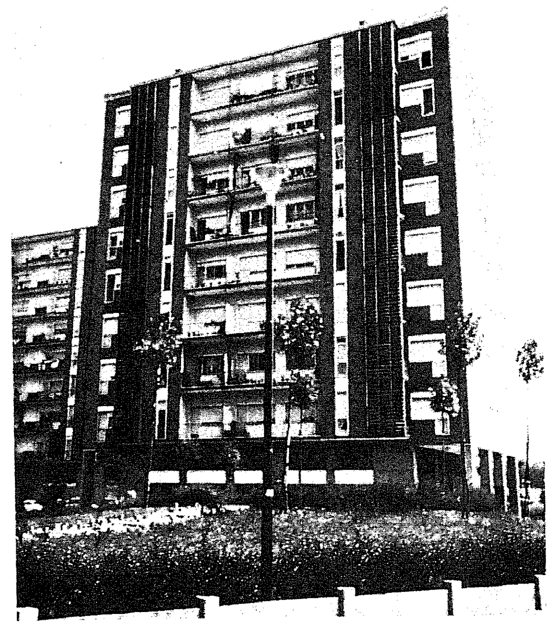


Fig. 13
Rotterdam: Zuiderpark

Allotment gardens (these adjoin the new developments of Pendrecht and Zuidwijk) are fairly common in northern Europe. They are frequently not located on the same site with the housing, but are planned to complement the residential open spaces.

Fig. 15
Turin: Corso Sebastopoli

Large balconies, in this case almost the entire length of the dwelling units, furnish usable open space above ground level. Mothers with very young children may prefer balconies to ground floor space because they are able to be inside their apartments at work while their children are close at hand, yet outdoors, at the same time.



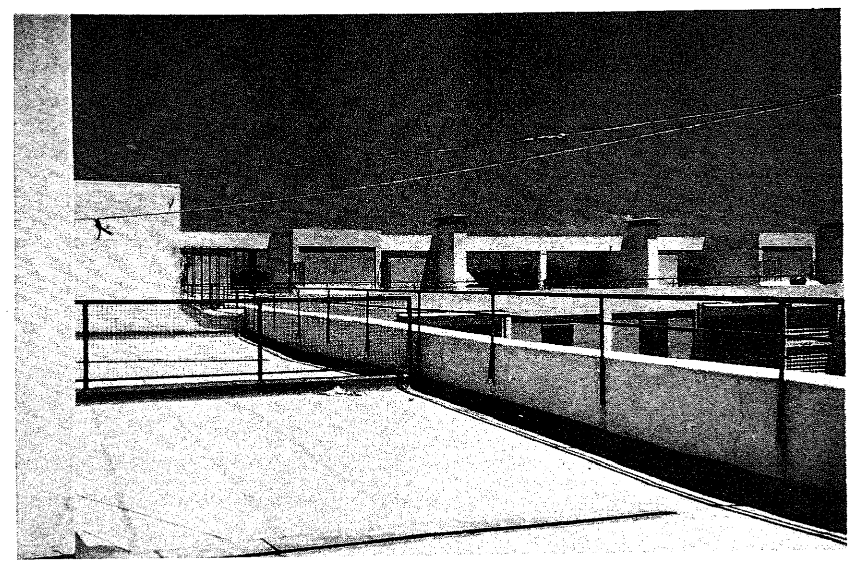


Fig. 14
Athens: Thebes Street

Roof space can be utilized for clothes washing and drying. On this building the parapet and guard rails are safety features for children who play while their mothers work.

INDIVIDUALITY

The possibility for self-expression in external design should be available to occupants of all housing. Although mass building techniques have reduced the opportunities for individual design expression in recent single-family housing developments, such opportunities are even more limited for occupants of multi-family housing projects.

The advantages of individuality in multiple housing are twofold. Occupants have the satisfaction of expressing their personal taste and at the same time, the resultant variety relieves the monotony so common to housing projects. Carried to the extreme, however, variation without any over-all coordination can result in a chaotic appearance. Clearly, balance is essential. Within the framework of a carefully designed scheme, parts should reflect the individuality of the occupants.

In low-rise multiples, external individuality is achieved through the

use of different building [illegible] other design details. [illegible] elements challenge to the design [illegible] more [illegible] ality. Some recent [illegible] for ind[illegible] and projections in such a manner [illegible] through se[illegible] ognizable from the exterior. [illegible] units ar[illegible] to give tenants freedom [illegible] large bal[illegible] variety to the face of tall [illegible] and [illegible] vate outdoor space at ground [illegible] buildings wi[illegible] still another solution. [illegible] occupants [illegible]

Some recent European studies [illegible] development adaptable housing unit, one that [illegible] individuality o[illegible] ants and could be adapted to [illegible] needs of [illegible] ilies. Such a proposal is more [illegible] low-rise m[illegible] ples because of the complex [illegible] involved in alt[illegible] a tall building.

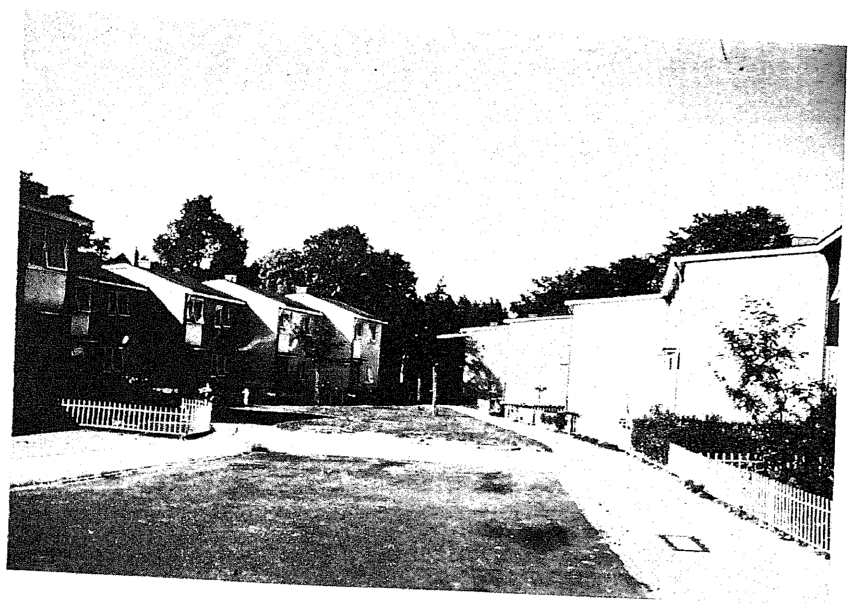


Fig. 16
London: Alton Estate

Each unit in the row is painted a differe[illegible] color which gives the buildings the appearan[illegible] of separate houses.

Fig.
San Francisco: Diamond Heigh[illegible]

The individuality of these units is identifiab[illegible] even in the construction phase at this sit[illegible] The irregular roof lines and broken faces [illegible] the row units in the foreground show identi[illegible] fiable, separate dwellings, and in the back[illegible] ground the chimneys and balconies achiev[illegible] the same effect.

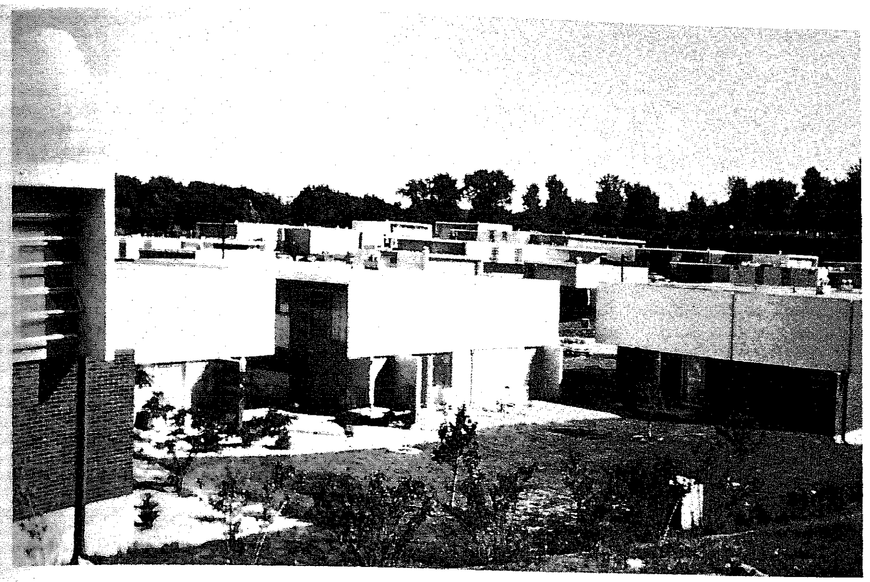


Fig. 18
St. Louis: Park Towne

The basic dwelling units in this development are very similar, but they are deployed on the site in seemingly random fashion. The net result is an appearance of variety and individuality. In addition, the outdoor space around each dwelling can be utilized to suit the tenants' needs - a garden plot, a paved patio for play or outdoor cooking, or a heavily planted space for maximum privacy.

Fig. 19
Hannover: Laher Kirchweg

In tall buildings individuality is achieved by different colors and furnishings of balconies. Umbrellas, flower boxes, even drying laundry help to give animation and variety to the building facade.

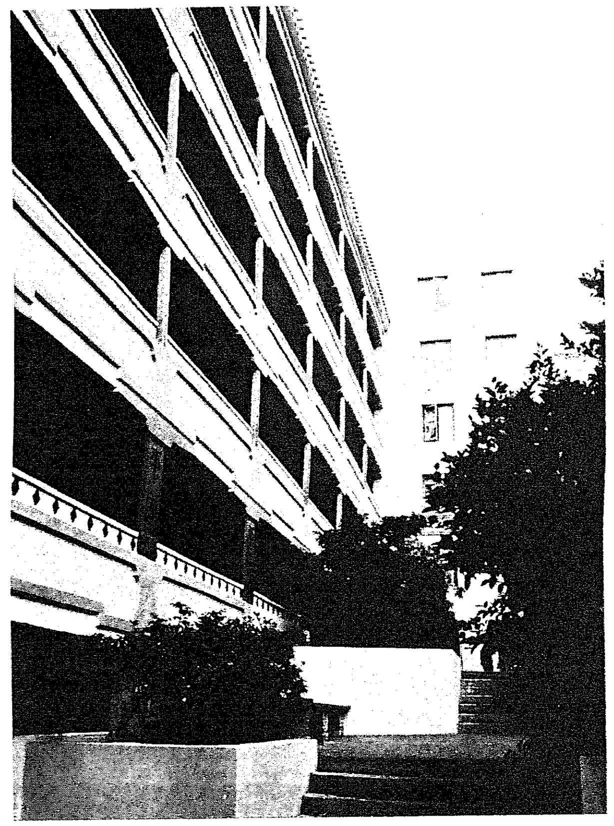


Fig. 20 and Fig. 21
San Francisco: Ping Yuen

The Chinese background of all the occupants of this building is expressed on the facade. The details of the gateway, the exterior trim on the building, and the style of landscaping all contribute to the theme.

DIVERSITY OF HOUSING TYPES

A quality aspect that is closely related to individuality is diversity of housing types. It is achieved by mixing different types of buildings on a site. Occasionally diversity of buildings is mandatory, not optional, owing to building costs and special engineering problems posed by certain sites, particularly those with irregular land forms.

Diversity is especially important for large developments where the repetition of identical buildings results in dreary monotony. It is this monotony of appearance that has contributed to the stigma attached to the term "housing project." In the United States, "housing project" is often equated with non-quality housing. In addition to aesthetic considerations, there are practical arguments for varying buildings. People have different housing needs. Differences of age, income, and family composition, for instance, should be reflected in the types of multi-family units that are constructed on a single site. A project with a variety of dwelling types, not just a variety of interior spaces, might be able to accommodate and encourage a mixing of population. one of the social objectives of some large-scale housing developments.

The illustrations show diversity primarily in the height and shape of buildings, but other variety is also desirable - building materials, sizes of open spaces, landscape treatment, and site details. A well designed housing development is often a reflection of the great diversity of the city as a whole.

Fig. 22
Amsterdam: Slotervaart

On a flat site this tall building contrasts with the uniform height of the low buildings and presents an interesting skyline. The tall structure also appears as a focal point for the development.

Fig. 23
London: Alton Estate

Diversity usually results in the division of a large site into sub-areas within which a similarity of housing form prevails. As long as the sub-areas are not too large, the large site seems varied. In this development the one-story cottages are grouped around a small open space that is in scale with the size of the buildings, and the taller buildings are planned with larger spaces around them.

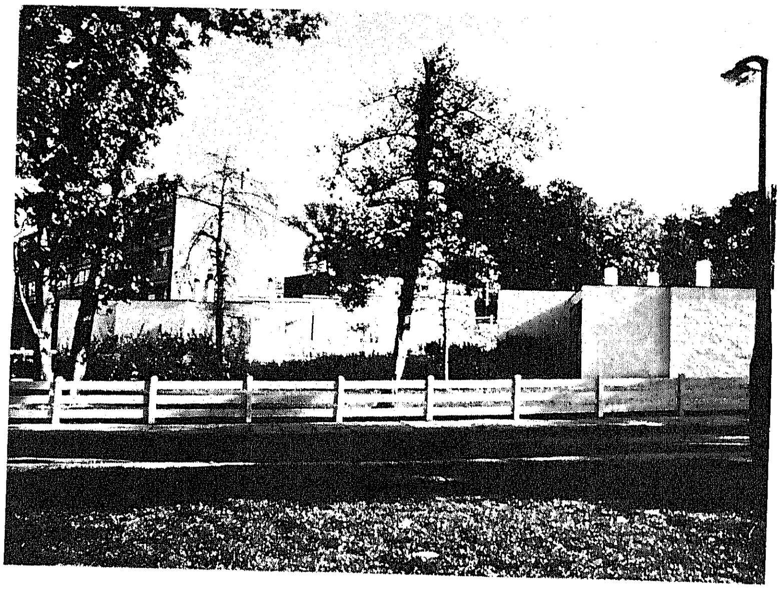


Fig. 24
London: Alton Estate

On a hilly site a point block on a high portion of the site commands a distant view and seems "natural" in this location. The form of the row unit illustrates the characteristic of rhythm that contributes to diversity.

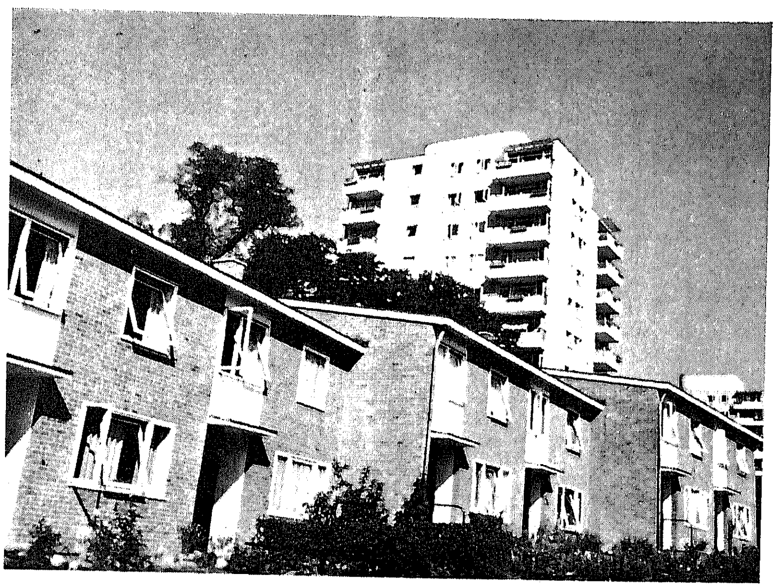


Fig. 25
Amsterdam: Slotermeer

A fairly common technique of site planning where a mixture of housing types is used is to turn the buildings at right angles to each other. The feeling of the occupants of the lower building that they can be seen from the taller structure is minimized by this technique. It helps to create both real and apparent privacy.

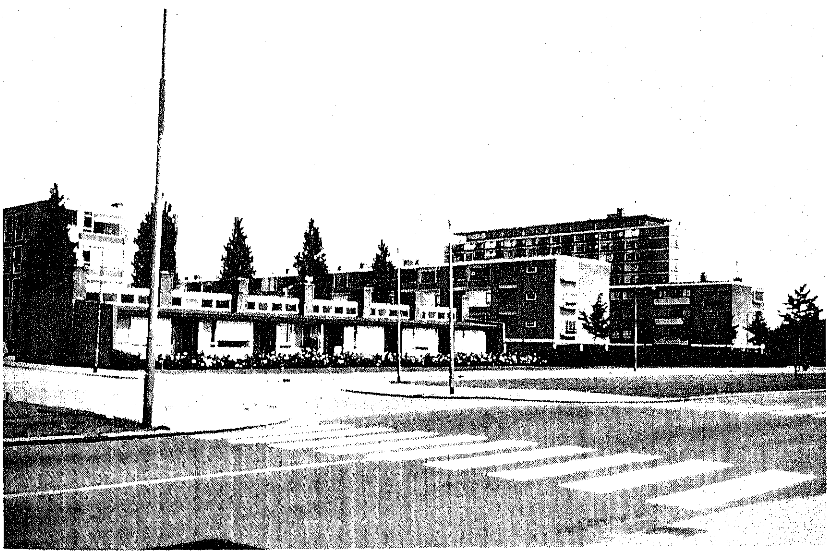


Fig. 26
Rotterdam: Pendrecht

A great diversity of housing types in a relatively small area is evident in this picture. The repetition of similar buildings scattered over a large site permits construction economy.

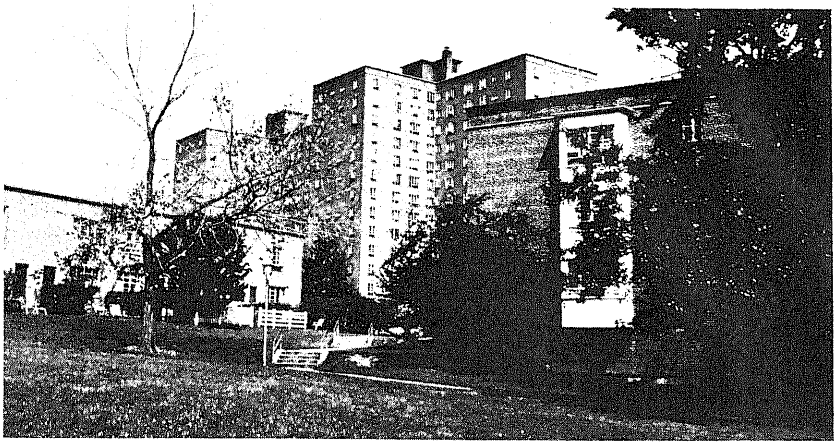
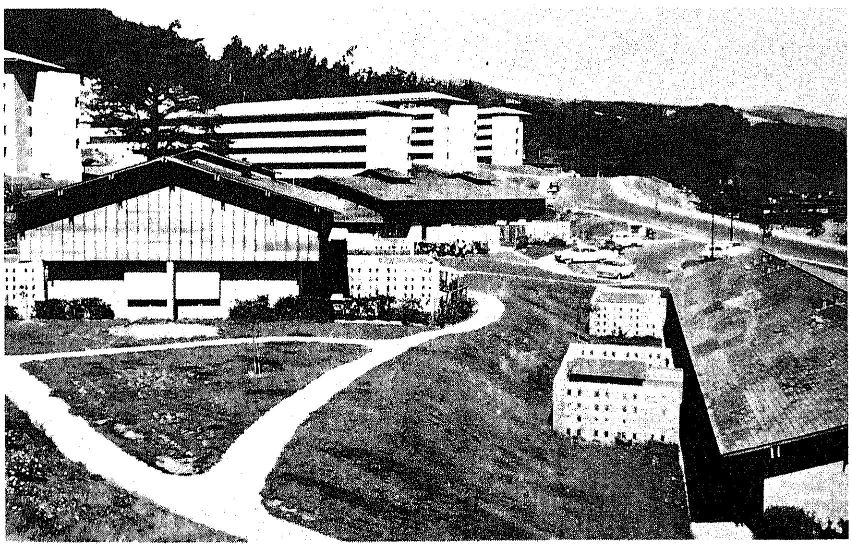


Fig. 27
New York: Fresh Meadows

The mixture of housing units on this site reflects different needs of the occupants. The tall building was designed primarily for adults; the lower buildings were planned for larger families with children.

Fig. 28
San Francisco: Marin City

The open planning of the lower density units contrasts with the more intensively built hillsides. The slope continues behind the five-story buildings which do not block any distant view from the lower area; instead they help to define the site boundaries.



LOCATION

In order to achieve high quality, multiple housing must be well located with respect to its surroundings and with respect to natural site characteristics. In selecting a location for a multiple housing project, proximity to city services - employment areas, mass transportation facilities, shops, and public activity centers - should be a consideration. The natural conditions of a potential site - terrain and landscape - are also important considerations in selecting a location. Housing sites with locational advantages such as rolling terrain and close proximity to city services are often reserved for single-family housing, while multiple housing is zoned in less desirable areas. The result of this practice is to concentrate the greatest number of people in the poorest locations. In the interests of improving housing quality, choice areas should be available for all kinds of housing.

There is no one location best for multiple residences. Furthermore, location itself does not guarantee quality development. Many good sites have been spoiled by dull building design and poor site planning. Conversely, good housing has been constructed at unsatisfactory locations.

If a site lacks natural beauty or is deficient in some other way, the best design may result from the creation of an internal focus - buildings that face inward on a man-made environment. Where the site is so crowded that even the man-made spaces lack amenities, one can only hope that good spaces exist within the confines of the individual dwelling units.

Fig. 30 and Fig. 31
Vienna: Pointengasse

A rolling site with m
natural condition. T
as not to disturb veg
housing project of gre

Fig. 29
San Francisco: Easter Hill

The rough character of this site influenced its selection. It has not been "cleaned up." The result is a site with natural beauty, color, and texture. The rocky hillside also makes an excellent playground.

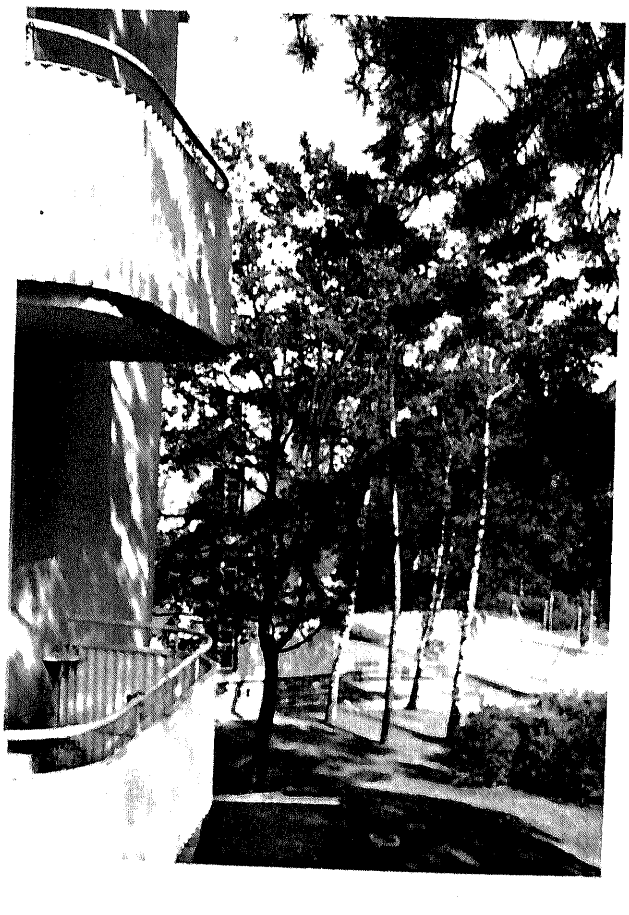


Fig. 32
Rotterdam: Lijnbaan

The housing in the background is located in the center of the city. Most city services (employment, shopping, etc.) are within walking distance of the site. As a consequence many of the residents find little need for private automobiles. This location has proved to be a very desirable one even for families with children.

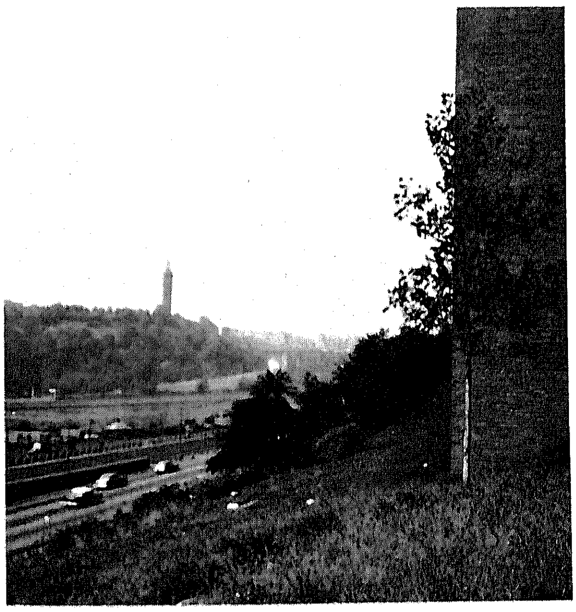


Fig. 33
New York: Highbridge Houses

This site near a river and above a busy highway combines a dramatic view with convenience to major transportation facilities.

Fig. 34
Amsterdam: Osdorp

At this location the artificial lake and major recreational facilities act as a buffer between the new development and older portions of the city. The convenience of these recreational facilities also adds to the quality of this site.

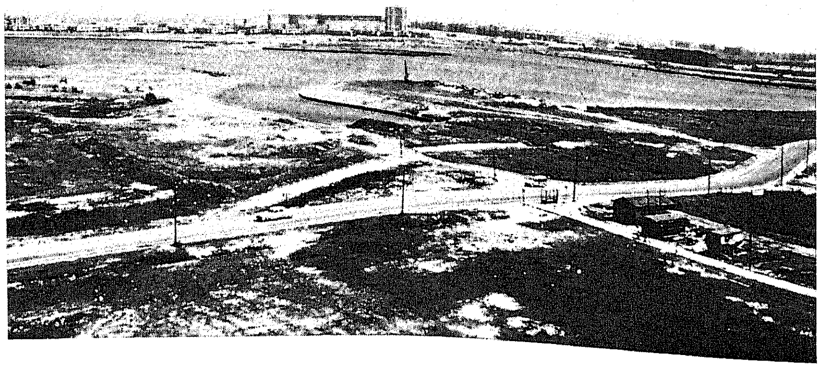


Fig. 35
Paris: Sarcelles

When natural site features are lacking, it is possible to create man made topography by building artificial hills. Instead of being carted away, the earth that is cut for foundations can be used as fill to build these hills.

Fig. 36
San Francisco:
Aldea San Miguel

The thick woods and the rolling terrain of this site enhance the architecture of the buildings. The road winds around the hillside and the housing units are scattered among the trees.

PROXIMITY TO COMMUNITY FACILITIES

This aspect of livability is closely related to location. If a housing project is small, the selection of a site should be made in relation to the availability of existing community service facilities. If the site is large, many of these facilities should be built on the site, especially facilities for education and recreation (nursery and elementary schools, tot lots and play grounds). The selection of facilities to be built on the project site is closely related to the specific needs of the residents. Housing designed for the elderly, for example, will require special medical services but not schools. The precise standards of size and location for each facility, however, depend upon a number of factors that are outside the scope of this study.

Some facilities should be located in the center of the housing project so that they are convenient to a majority of residents and can become points for community life. Schools and community buildings are good examples. Other services are best located on the periphery of a site

Fig. 37
Vienna: Pointengasse-Andergasse

These stores face the boundary road of the project. The housing units face inward on the pedestrian open spaces. The community facilities are convenient to, but do not infringe on the residential areas.

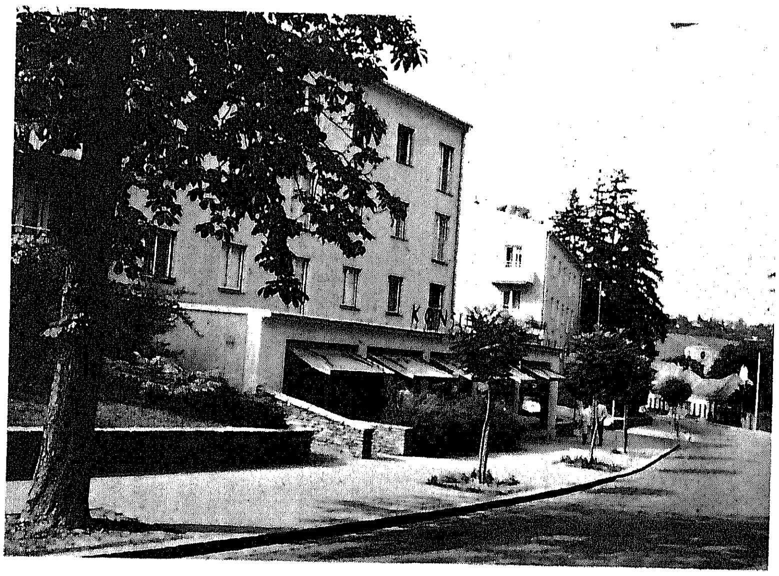


Fig. 38
Amsterdam: Slotervaart

The open space around
planned is a focal point
The apartments on the up
primarily for single perso
who desire proximity to t

to avoid excessive traffic in the midst of the housing and perhaps also to serve adjoining residential developments. Shops, theaters, and restaurants are examples of facilities that might be appropriate on the fringe of a housing project. On some sites, community facilities are placed on the ground floors of multi-story housing blocks. I found shops, schools, community rooms, and cafes on ground floors of residences at some of the projects I visited.

It is not possible to anticipate every demand for community services. However, a flexible development plan will permit adjustment to accommodate future needs, particularly for large projects. Since construction is normally undertaken in stages, adjustments can be made during the actual building process.

The following photographs show examples of community facilities that are integrated in the housing developments. The site plans in Appendix One show the great range of such facilities that exists at current projects.

Fig. 39
Milan: Comasina

This cluster of shops and residences is located on the edge of the project site. The right angle orientation of the two uses minimizes conflicts between the public use of the shops and the privacy desirable for the apartments.

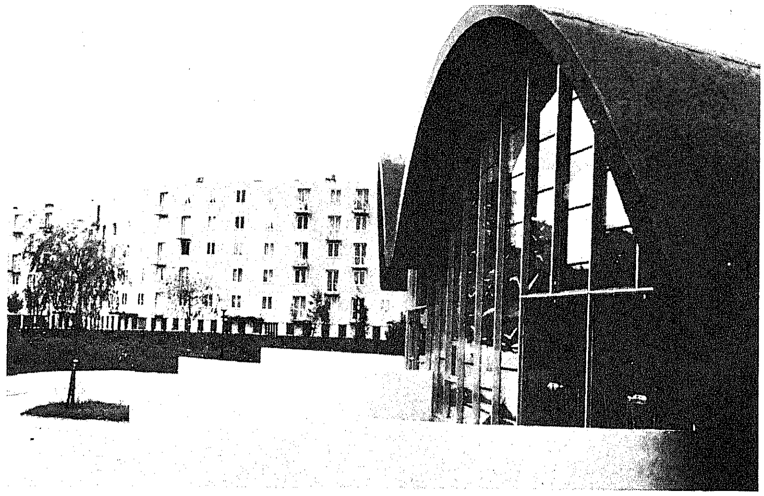


Fig. 40
Paris: Cité les Courtillières

The architectural quality of this school makes it a visual focus as well as a community focus for the housing area it serves.

Fig. 41
Milan: Comasina

This church was built at the same time as the housing units of the development. At this site the religious composition of the population was predictable in advance.

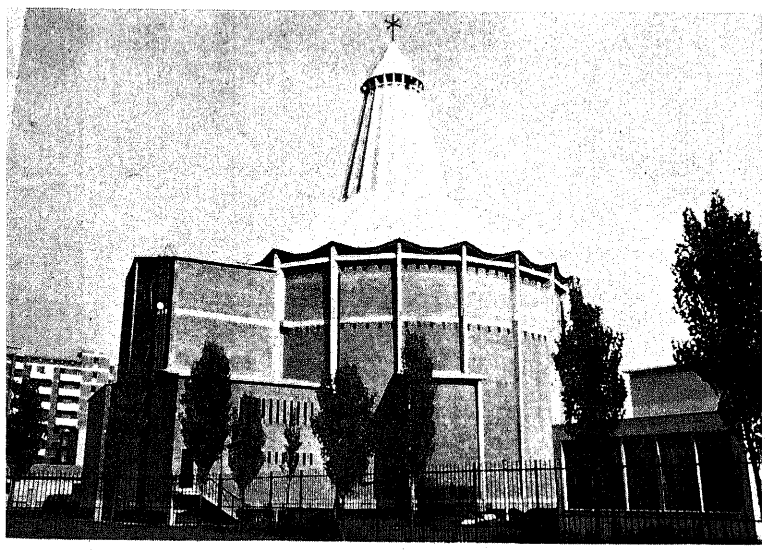


Fig. 42
Amsterdam: Slotervaart

This school was built at the same time as the housing units. At this project several other schools were built as temporary structures until the permanent school population could be determined.

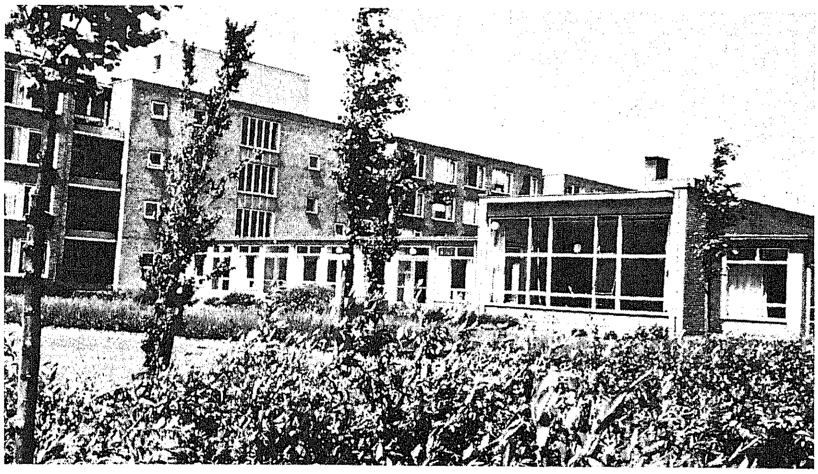


Fig. 43
Milan: Comasina

The popularity of outdoor markets cannot always be predicted in advance, but the provision of paved outdoor space will accommodate them on the site should the need arise.

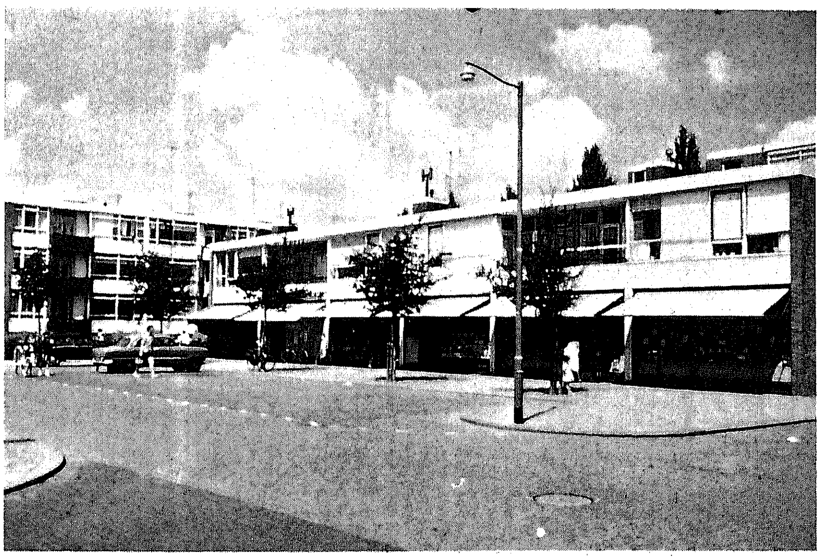


Fig. 44
Rotterdam: Pendrecht

The use of similar architectural styles makes these shops "fit" into the residential environment.

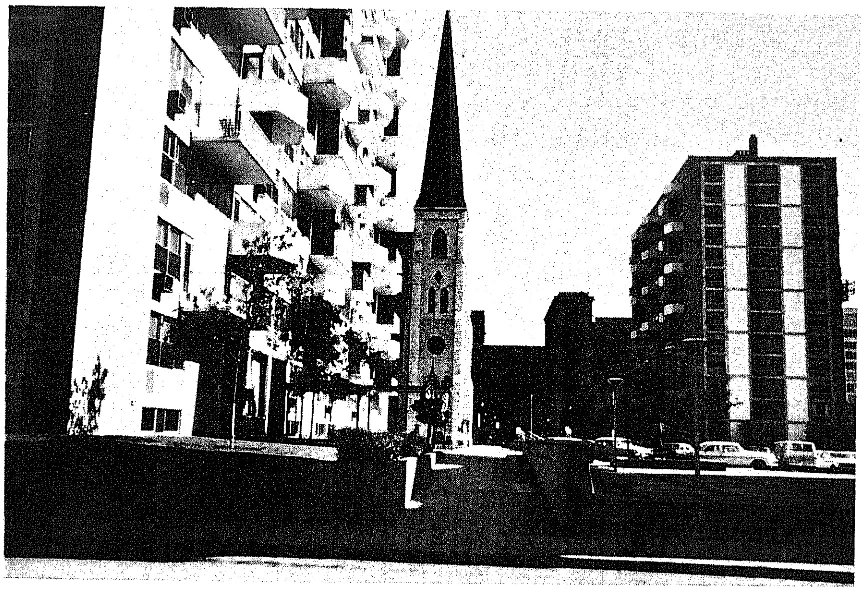
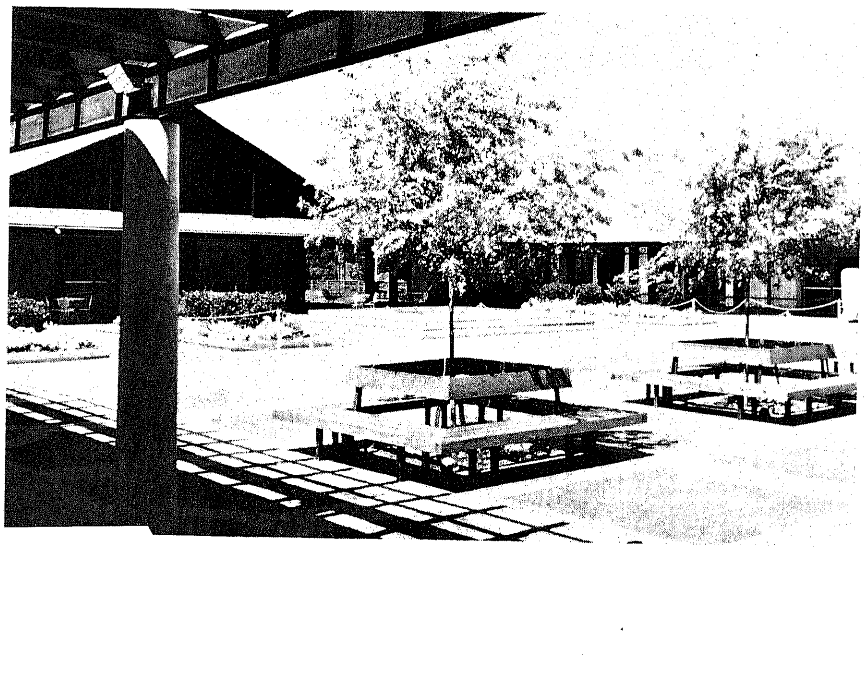


Fig. 45
St. Louis: Plaza Square

On this small site the existing churches were integrated into the plan for the housing project.

Fig. 46
San Francisco: The Sequoias

Community facilities at this project are planned for the elderly occupants of the housing. This picture shows a community building and the adjoining recreation area.



SAFETY AND HEALTH

A basic objective of housing is to provide a safe and healthy environment. Safety and health factors are indeed influences on livability.

The location of a housing project is critical to safety in relation to both on and off-site activities. A housing site designer is unable to control off-site development, but he can plan a site which provides for separation of pedestrian and vehicular circulation, minimizes conflicts caused by incompatible adjoining uses and has buffers against heavy traffic on bordering major streets. As a rule, interior planning and non-design factors play a more important role in physical and mental health considerations than does site planning. However, the designer can contribute to healthful living by planning for adequate sanitary facilities on the site and by spacing buildings so that light and air are adequate for all dwellings.

Fig. 47
New York: Manhattan House

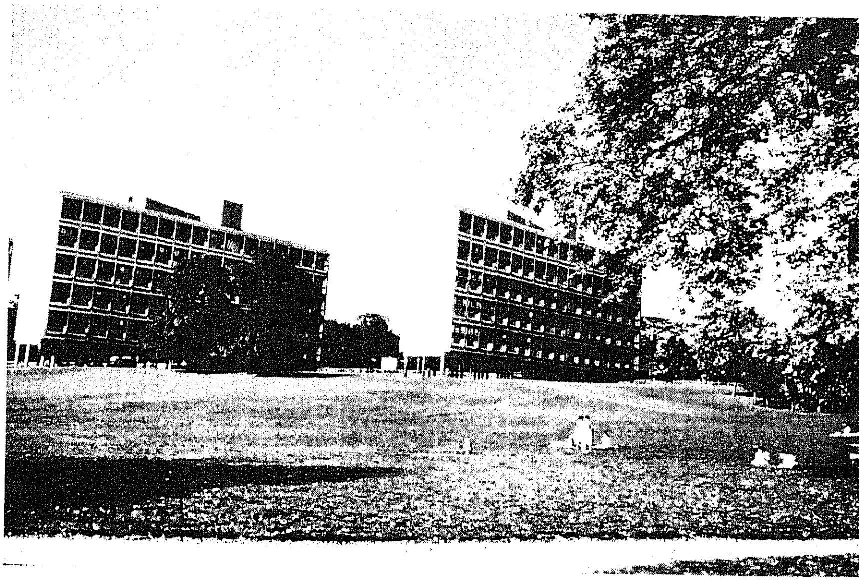
The dangers of heavy city traffic are minimized for this small child. This open space adjoins a very busy street, but protection is afforded by an enclosing wall which keeps the children in and the traffic dangers out.

Fig. 48
Amsterdam: Slotervaart

There is less danger of serious accidents on minor streets. When traffic ways are kept some distance from project buildings, even greater safety is assured. This street is used only to service the residences. Through traffic is kept away from both residences and recreational areas.

Fig. 50
London: Alton Estate

Sunlight and air, requisites for healthful living, are available for each apartment through adequate spacing of tall buildings. The location of the site itself, isolated from heavy traffic and industrial fumes, helps contribute to the safety and health of the occupants.



CIRCULATION

On housing sites it is important to plan for easy and direct movement of pedestrians and vehicles. Convenience of circulation and safety must be considered and planned together. Pedestrians generally prefer to walk in direct, straight lines. When they must use indirect or awkwardly placed walkways, they may take unauthorized routes, often trampling grass, shrubs, and other plants. Paths should follow topography and natural lines of movement, widening as traffic increases and narrowing in less used areas. The pedestrian circulation system should also be designed to distinguish between the front and rear entrances of buildings. The quality of a multi-family dwelling appears to decrease when one entrance has to accommodate the removal of garbage and the entrance of guests, for instance. In part, this is a matter of interior space planning, but it is also a concern of site design.

Fig. 52 and Fig. 53
Paris: Marly-les-Gr

This project illustrat
ration of circulation.
of the central open sp
is gained from the ou
ings. Convenience an
ble at this site.

Some pedestrian traffic considerations also apply to vehicular traffic - automobiles, scooters, service trucks and in some cases, bicycles. It is necessary that minor roads come close to buildings to facilitate delivery of goods, protection in inclement weather, and access for emergency vehicles.

Vehicles should be able to approach residential buildings, but need not remain there and conflict with pedestrian movement. The ideal solution seems to be the vertical separation of pedestrians and vehicles; however, this type of separation is generally limited to central city locations where heavy traffic volume justifies the great expense. At outlying locations horizontal separation is much more common. Many of the site plans included in this report show the separation of pedestrians and vehicles and most frequently accomplish it by restricting automobiles to the periphery of a site and by allowing free pedestrian movement in the center.

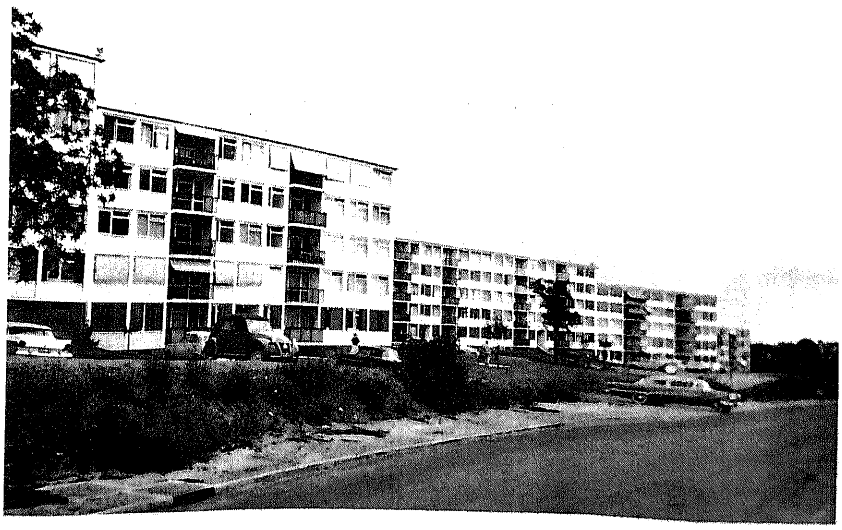


Fig. 54
Paris: Domaine de Beauregard

Pedestrian circulation, simple and direct, is well planned at this site. The turn in the path and the narrower walkways at the building entrance are both indications of thoughtful design.

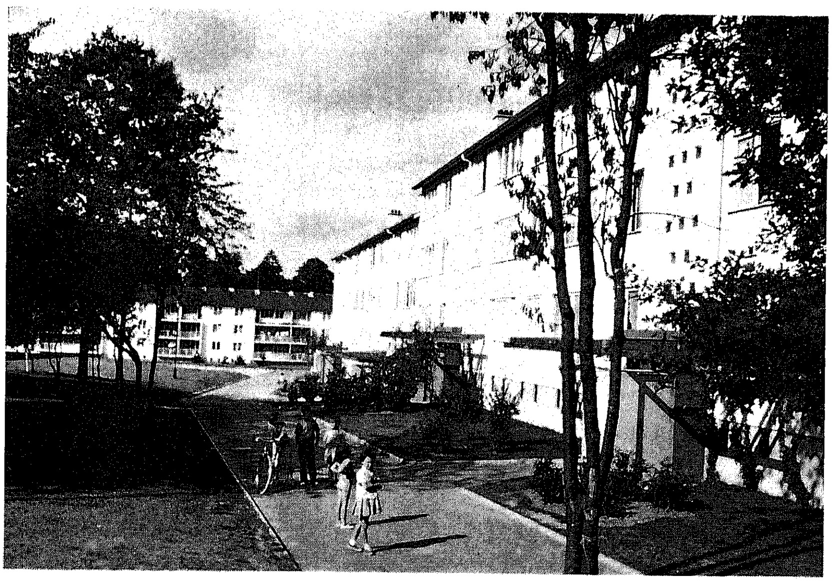


Fig. 55
Hannover: In den Sieben Stücken

This carefully detailed sidewalk leads to the rear entrances of the residential buildings. Other entrances are provided on the front face of the row units for the guests who can also park close to the front doors.

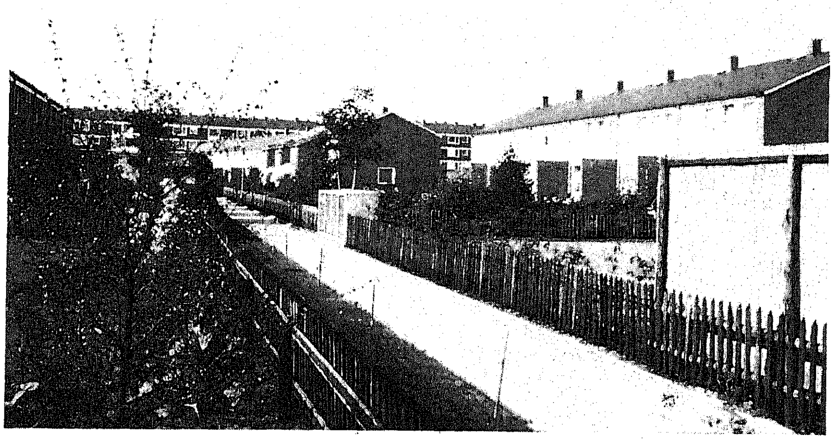


Fig. 56
Rotterdam: Pendrecht

The separate spaces for vehicles and pedestrians are clearly marked by location, materials, and a slight change in elevation. A small parking bay is provided close to the residences for service vehicles and visitors.

AUTOMOBILE STORAGE

The tremendous increase in automobile ownership has had a profound influence on the design and location of residential districts. The problem confronting site planners is to create a balance between the allocation of space for automobile storage and for other outdoor uses. This problem is made more acute by the pressure to satisfy occupants' demands for parking as close as possible to their dwellings.

In cities that I visited (with the possible exception of those in southern Europe), the ownership of automobiles is reaching or has already reached a ratio of one car per family. This ratio seems to prevail for all projects regardless of occupants' incomes, but many sites are not being built to this standard. If ownership of cars increases, the inadequacy of accommodations will be felt even more. Unlike other site facilities, parking space cannot be added in stages without destroying some aspect of quality. At high income housing projects, the ratio can be as high as two cars per family. It follows that for all new housing developments, at least one parking space is needed for each dwelling unit. The exceptions might be for housing for the elderly and central city housing where the cost of providing parking facilities is prohibitive and the ownership and operation of a motor vehicle is limited because of other factors. At many sites there is a need to allocate space for visitors' cars in addition to those belonging to residents.

Fig. 57
Amsterdam: Slotervaart

Some of the cars at this s
garages; others in scatte
one. The garage in the p
of servicing and minor au

Parking on this sit
clusters. The lots
individual dwellings

If parking needs are not met on-site, crowding of adjacent streets is likely to result. However, if parking needs are met on-site, the residential buildings sometimes look as though they are built on huge parking lots. The automobile then dominates the site and infringes on privacy. The net effect is a reduction, if not the disappearance of site quality.

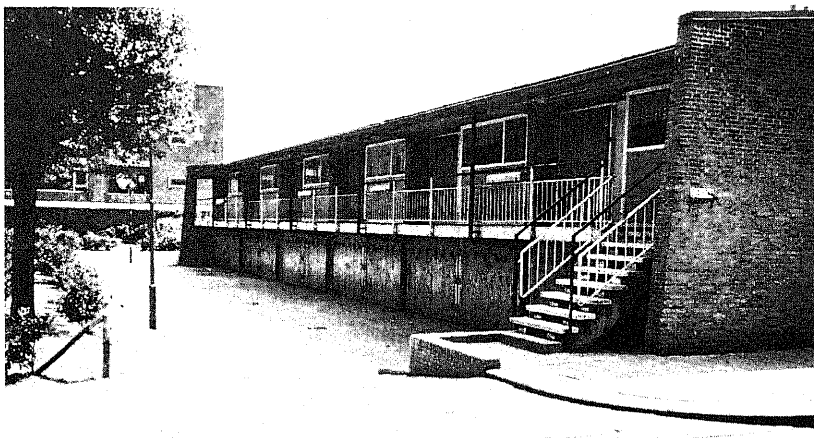
The most satisfactory solution is to store cars in areas hidden from view, preferably underground. In this way, automobiles would be convenient to dwellings; greater pedestrian safety would be ensured and open space would be preserved for other uses. However, underground parking is prohibitive in cost for most developments. The next best solution is the construction of parking structures, preferably low ones whose roofs can be used for playgrounds, laundry areas, sun decks, etc. Some recent multiple housing projects have been designed with parking on lower floors and apartments on upper floors of the same structures. Solutions involving complete separation of pedestrians and automobiles, though costly, may become mandatory for central city, high density housing. In outlying areas and sites of lower intensity development, it is possible to satisfy parking demands without vertical separation if careful site planning is followed. Usually parking space is provided by a number of small lots, screened from active pedestrian parts of the site. A number of small lots are aesthetically preferable to one huge paved area and, in addition, generally permit the majority of cars to be stored reasonably close to the individual living units.

Fig. 58

Fig. 59
Milan: Forlanini

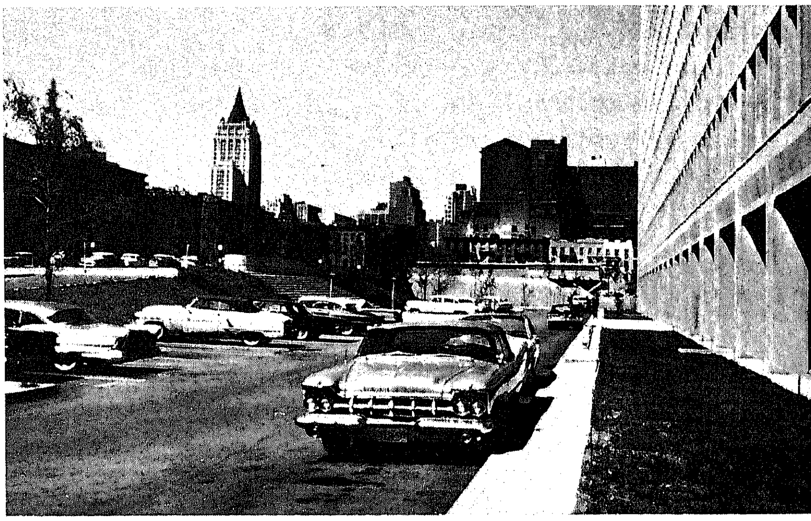
Parking at this site is underground. Open space is retained for other uses, for gardens in this case.

Fig. 60
Rotterdam: Pendrecht



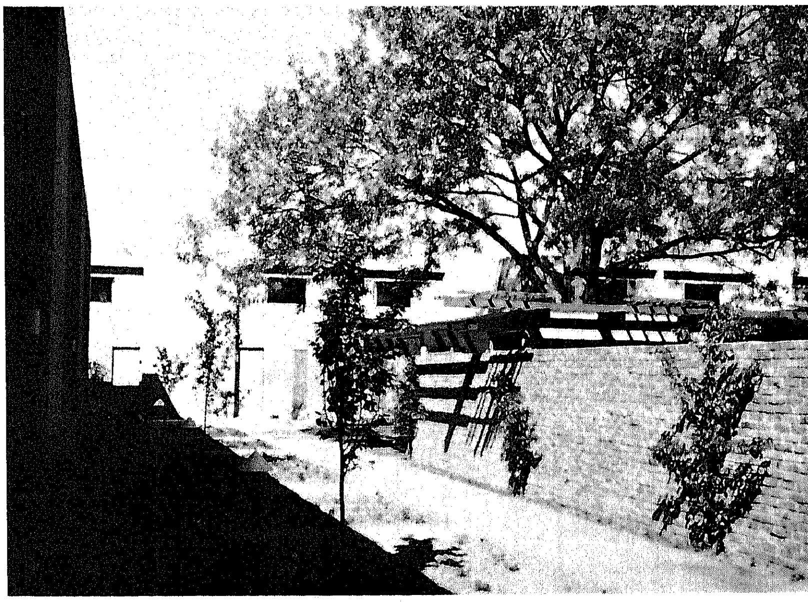
At lower density projects it may be possible to provide private garages attached to individual dwelling units. The automobiles are hidden from view under this building; access to these garages is from the rear of the building block.

Fig. 61
New York: Kips Bay Plaza



A change in level, the landscaped banks, and a wide staircase combine to minimize the size of this large split-level parking area. The majority of automobiles are stored underground at this central city site.

Fig. 62
San Francisco: Creekside



Where all the cars are placed on grade, the utilization of screening devices - walls, shrubs, trees, and baffles of all kinds - insures a great deal of privacy. Thus hidden, cars can still be parked convenient to all housing units.

BLENDING OF NEW HOUSING INTO ITS SURROUNDINGS

A characteristic of much new housing is its starkness, its abrupt, often harsh and disturbing contrast with its surroundings. More thought and respect need to be given to a project's environment, its immediate environment and also to the entire city which has evolved with years of growth and development. This aspect does not call for slavish imitation of architectural styles; it calls for a blending of new sites into the older fabric of a city. Blending may be achieved a number of ways, among them the use of scale, color, materials, landscape features, and site details.

To design housing projects which are new in their utilization of technological advancements and their expression of contemporary taste and living, yet which fit harmoniously into their environments is one of the most difficult challenges and essential tasks of site planners and architects.

Fig. 63
New York: Jefferson Houses

This picture was taken in front of a 14-story tower. The transition from the surrounding area of predominantly five-story buildings is effected by means of this large open space which separates the two building areas.

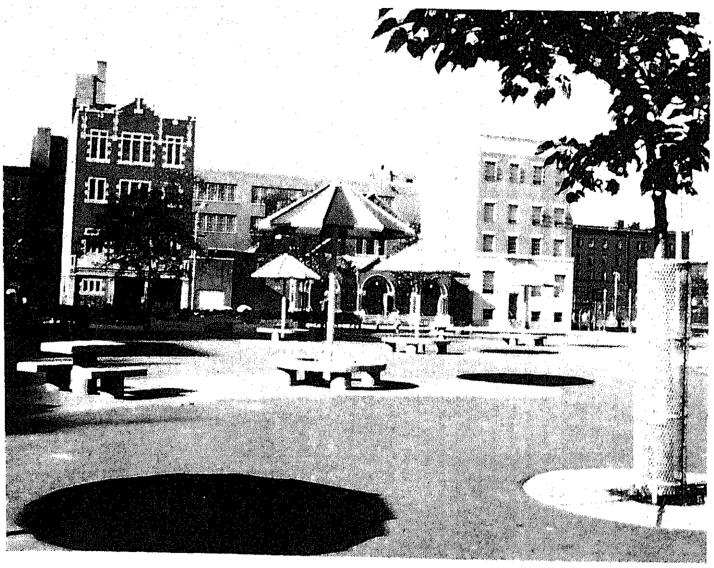
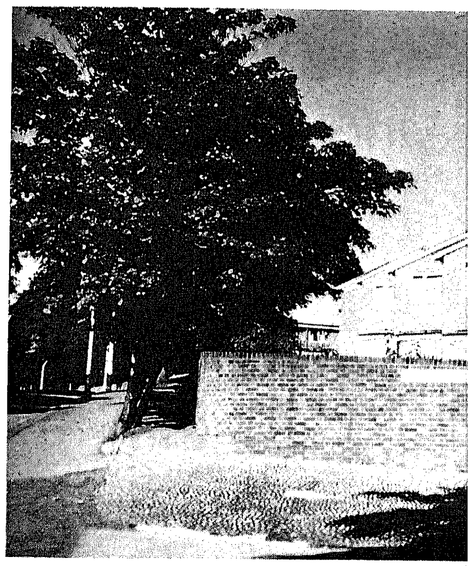


Fig. 64
London: Alton Estate

Blending here is achieved
materials. The brick wa
ment, reminiscent of an e
are introduced in this ne
temporary manner.



The extent and type of blending is influenced in part by site size, location and the historical significance of buildings in the area of a new project. On small sites the need to blend new housing into older surroundings may be less urgent. Here dramatic departures in design may be possible and even desirable. On a large site, radical design innovations might be most appropriate in the center of the site, with a more gradual transition at the site periphery where contact with older design forms is the closest.

Many of the new housing sites that I visited were located in open country away from built-up, older areas. Here the problem is one of integrating projects into the landscape and not with buildings. Where a new project was located in an older portion of a city, blending into the surroundings was very infrequent. These few examples illustrate the little blending I was able to observe.

through construction
lls and cobble pave-
arlier design period,
w housing in a con-

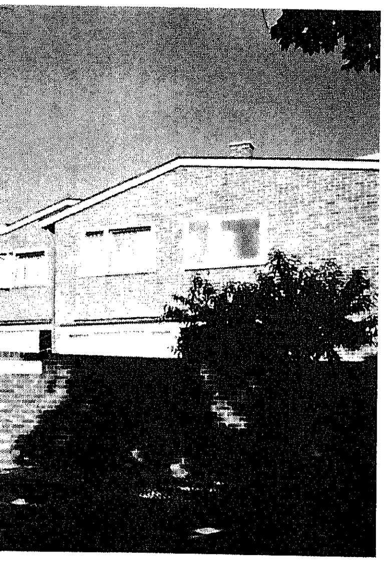
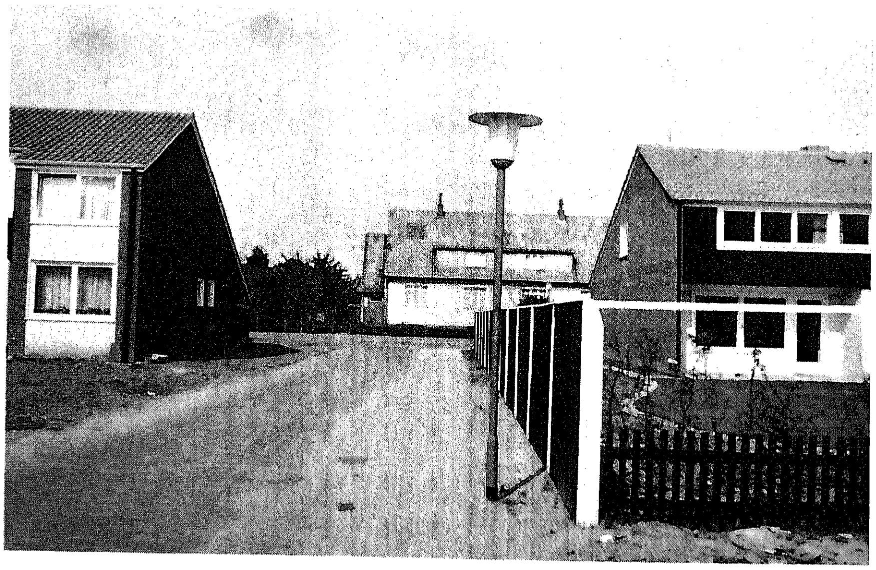


Fig. 65
Hannover: Hemmingen-Westerfeld

The building in the background was built prior to W.W. II, but the new structures, built in 1961, respect its size, materials, shape, and position on the site. At this project the high-rise structures are located in the middle of the site, farthest from the older buildings.



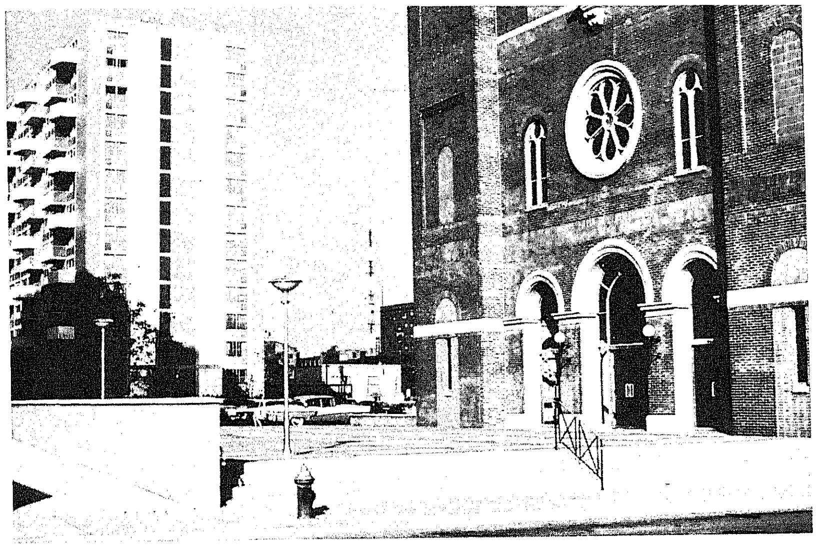


Fig. 66
St. Louis: Plaza Square

In some developments the continuity between the old and new is maintained through the retention of old buildings amidst the new ones. When this site was cleared and rebuilt, the church was left standing and its entrance was redesigned to blend with the details of new site construction.

SITE DETAILS

Well-designed, well-maintained site details add significantly to the quality of multi-family housing. Details such as pavement, plant materials, playground equipment, benches, walls, steps, lighting fixtures, and building facing often form the basis for judging a project. The layman is more likely to be conscious of these details than of the broader, more abstract principles of site planning.

At multiple housing projects, especially high density ones, the details must be of substantial construction to withstand the heavy use they are subjected to. In order to preserve the initial quality of construction, proper maintainence is necessary. Details that require constant attention and repairs are generally poor choices for multi-family housing construction. The omission or a bare minimum of site detailing is certainly not the alternative, for housing in an unfinished state ranks poor in livability.

The following photographs show examples of thoughtfully designed site details which because of sound construction and continual maintenance are attractive and promise to retain their fine appearance for many years.

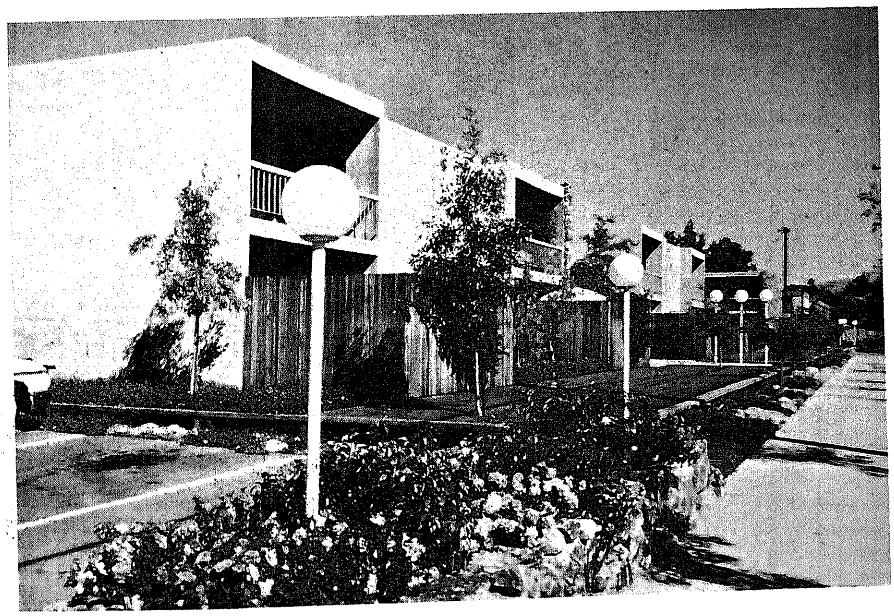


Fig. 67
San Francisco: Creekside

, paving, lawns, fences, and building
s were carefully selected and are ex-
y well-maintained.

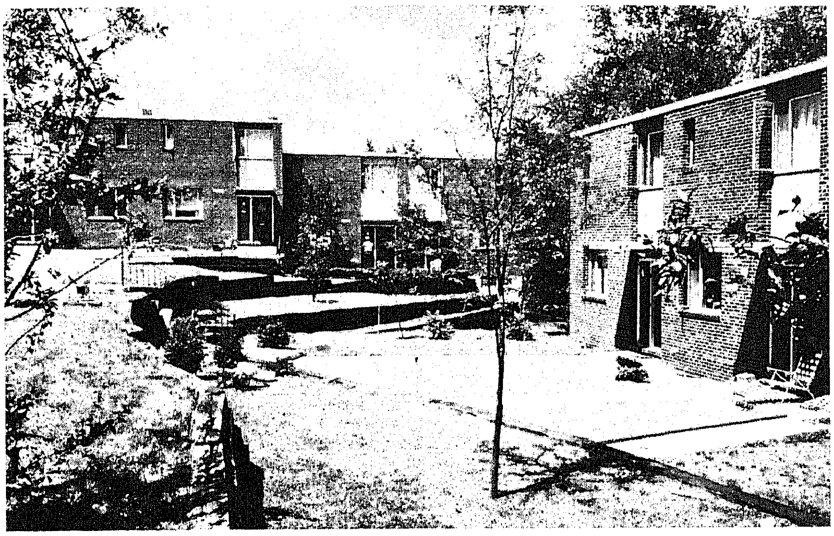


Fig. 68
St. Louis: Tower Hill Manor

The use of terraced changes in level an example of a handsome site deta This same theme is carried further the building facades which are stagger for privacy. This kind of repetiti is desirable on a small site.

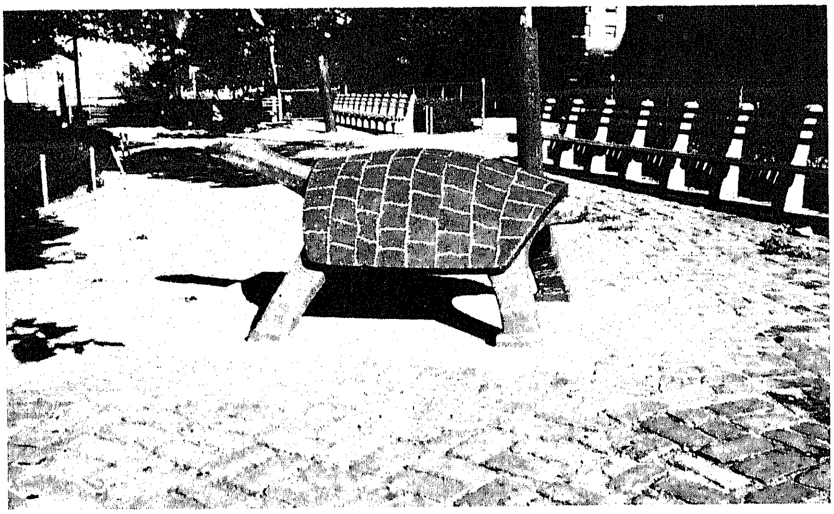


Fig. 69
New York: Jefferson Houses

The success of this piece of play scul ture is due to its simplicity and dur bility. It requires practically maintenance and blends with the ha surfaces around it.

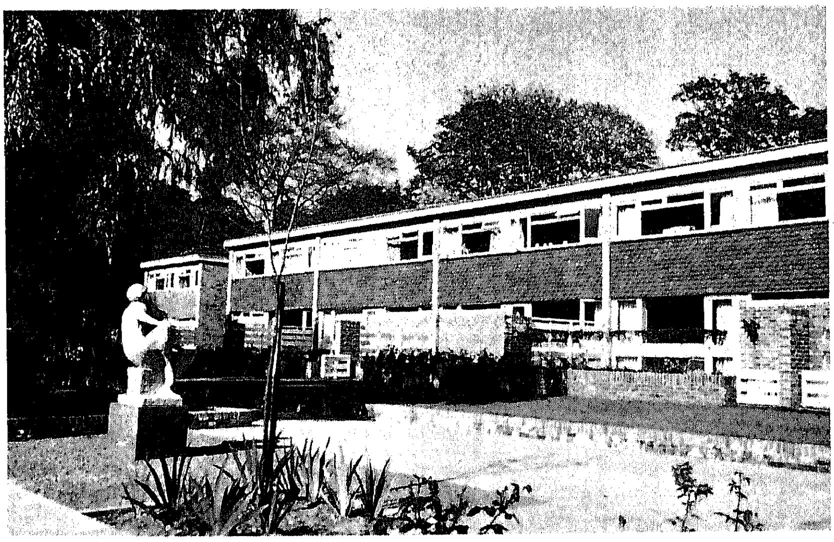


Fig. 70
London: Roehampton Vale

The way in which materials are co bined is as important as which ones a used. The durable materials - br and concrete - predominate, and less durable materials - wood a plants - are kept to a minimum.

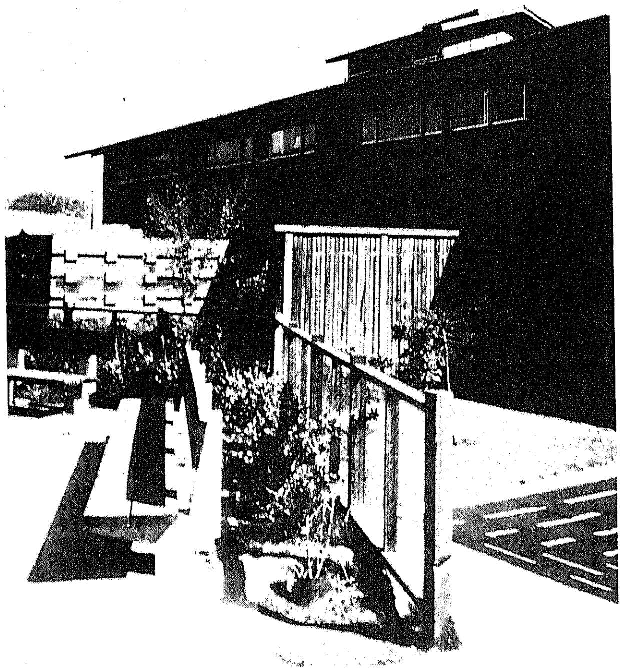


Fig. 73
San Francisco: Marin City

Details of site construction are often used to define space. The solid walls enclose service areas, the slats define private outdoor space, and the wire screen bounds the public sitting area.

VIEWS FROM AND TO A SITE

Views from and to a project site are aspects of design quality benefiting project residents and those of the entire city. When the location of a project permits, views should be planned of distant points in a city and surrounding countryside. Frequently such views are possible only from the upper stories of tall structures, but if the site itself is elevated, distant views are possible at all levels. However, not all views need to be distant ones. Some can be enclosed views with a feeling of intimacy and privacy. These should not be obstructed views, but should be of enclosed spaces, particularly of ground floor outdoor spaces around individual buildings.

The appearance of a site from close up and from a distance is of concern to all the inhabitants of a city. Views of a project or a number of projects, particularly prominently located ones, contribute to the over-all appearance of a city. Housing designers, therefore, need to consider individual sites as they appear from all angles - on the skyline, across large, open spaces, and from above - in planning the layout of buildings. It scarcely need be said that variety is an important consideration in planning for views. A scene of identical buildings, all evenly spaced, enhances neither the livability of a project nor a city. The best designs result when architecture and site plans are developed together and the building forms and the spaces around them blend into a harmonious composition.

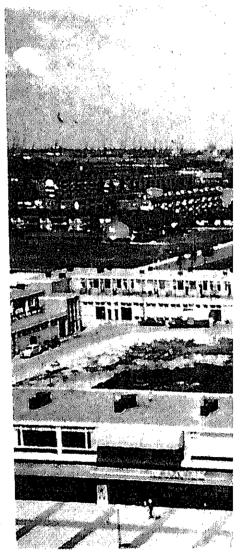


Fig. 74
Rotterdam: Pendrecht

This picture was taken from the top floor of an apartment building. The view is a panorama of the city. In the foreground are the shops and apartment blocks of the project; in the background are the cranes that line the harbor.

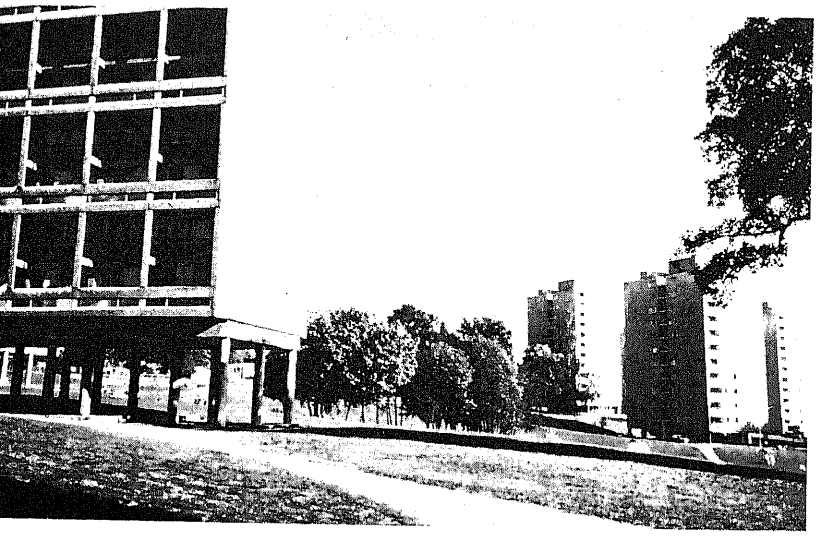


Fig. 75
London: Alton Estate

Open planning does not result in undefined space at this site. The placing of the distant buildings and the large cluster of trees in the middleground give definition to the hillside.

Fig. 76
New York: Fresh Meadows

The view is unlimited from this project.

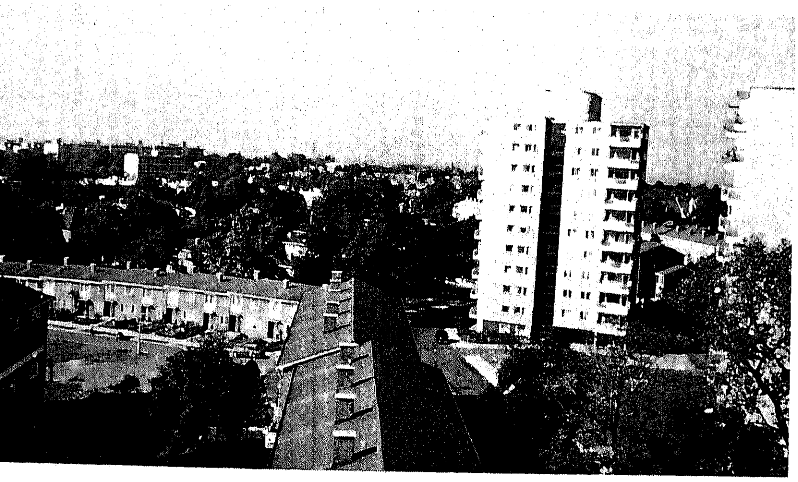


Fig. 77
London: Alton Estate

Other multi-family buildings and the distant landscape can be seen from the top floor of a high-rise building. The importance of roof design is illustrated by this picture. It also shows that tall buildings, properly placed, do not interfere with the privacy of the occupants of low structures.

Fig. 78
Belgrade: Revolution Boulevard

The silhouette of these point blocks along a ridge is strong. At night the dramatic quality of the design is even more pronounced.

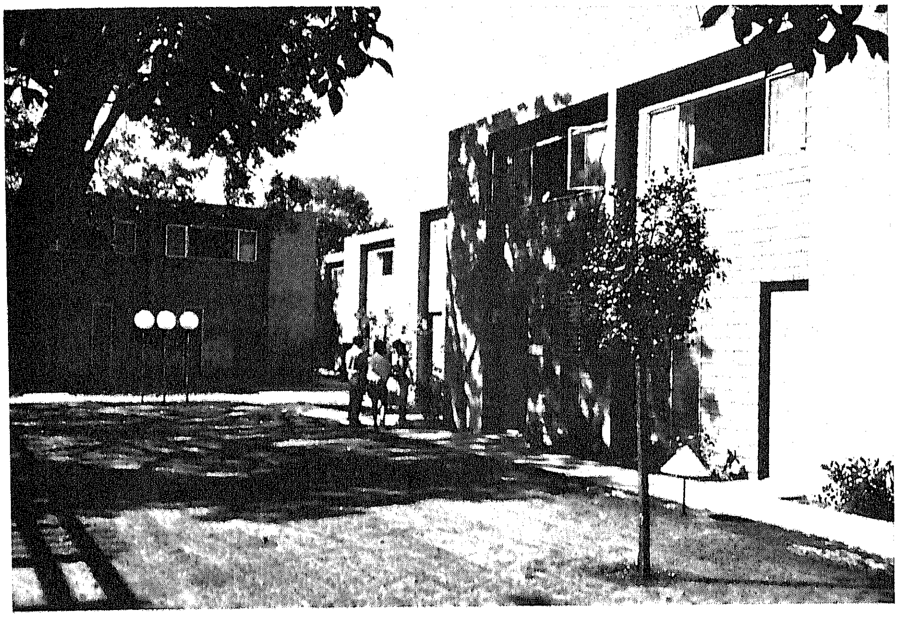


Fig. 79
San Francisco: Creekside

With low buildings the view can be completely enclosed. By staggering these buildings, the quality of the court is improved. The open space seems larger, less confining.

CHAPTER FOUR: INFLUENCE OF INTENSIT

This chapter analyzes the relationship between measures of intensity, as described in Chapter Two, and aspects of quality, the subject of Chapter Three. Since I discuss five intensity measures (density, coverage, floor area ratio, building type and size, and spacing) and twelve aspects of quality (privacy, usable open space, individuality, diversity, location, proximity to community facilities, safety and health, circulation, automobile storage, blending, site details and views to and from a site), sixty relationships could be indicated. However, not all quality and intensity factors are related in any meaningful way. Sometimes the relationships between them are complicated, involving a combination of intensity measures operating simultaneously. Only the most significant relationships will be commented upon.

The projects in this study are rated high in livability by the experts who selected them for my examination. Almost all the housing falls in the middle range of intensity; none have densities or coverages or floor area ratios in excess of acceptable standards. The standard maximum density for 13-story buildings recommended by the American Public Health Association Committee on the Hygiene of Housing is 95 dwelling units per net acre. Of the 60 projects included in this study, only six have a net density above 100 dwelling units per net acre, and of these six, four have buildings more than 13 stories high. As a consequence, my observations on the relationship between intensity and livability are based primarily on a review of housing in this middle range. I can only make assumptions about the relationship for housing at higher or lower intensities. However, the spread within this middle range is fairly substantial, as is evident from the follow-

ing figures: density - 6.5 to 166 dwelling units per net acre; coverage - 5 to 40 percent; floor area ratio - .14 to 7; building type and size - one story row houses to 21-story high-rise buildings; and spacing - 15 to 330 feet.

INTENSITY AND PRIVACY

Of all aspects of quality, privacy seems to be the one most directly related to the intensity of residential development. Privacy and density are in direct contrast: as density increases, privacy declines. The more people on a given parcel of land and the closer together they live, the less privacy there is for each family. In theory, all dwelling units on a site could be stacked one on top of another and well insulated in order to assure maximum privacy. In addition, each unit could have a generous sized balcony shielded from view from all other dwellings. But even under such circumstances, admittedly theoretical and rare, privacy would not be complete because tenants would still have to share common interior circulation spaces and outdoor ground areas. In spite of a density of 135 dwelling units per net acre, the Golden Gateway project in San Francisco, when built, will provide a high degree of privacy to the occupants of its maisonettes and towers. The former will be built on a pedestrian concourse above street level, and the latter will have balconies for each unit.

Increases in coverage also tend to restrict privacy because an increased coverage implies a greater number of people living in close

proximity. The disadvantages of high coverage can be minimized somewhat by the use of sound insulating materials and visual screening devices, particularly at lot lines. However, high coverage need not necessarily cause a corresponding decline in privacy. The row houses at Hemmingen-Westerfeld in Hannover and also at Alton Estate in London are excellent examples of high coverage housing where privacy is preserved primarily by screening of private space at the lot lines.

Floor area ratio, like density and coverage, has a general inverse relationship to privacy. As floor area ratio increases, privacy usually decreases.

The close relationship between building type and size and privacy can be illustrated by the following comparison. In a single-family detached house, privacy is limited by the size of the building lot and the amount of traffic along its edges; in a multi-family elevator building, privacy is effected by a number of considerations, particularly the presence or absence of ground level open space available for the use of individual families. Low-rise multi-family buildings such as those at Park Towne in St. Louis are frequently designed with private outdoor space for each dwelling unit. The space is directly accessible to ground floor dwellers. High-rise buildings are more likely to have communal, not private, ground level spaces. If large communal play areas attract large numbers of children, the result is a considerable amount of noise at these parts of the site. On the other hand, the play areas designed for small, low buildings are usually small in size and are dispersed throughout a site, as at Easter Hill in Richmond, California. Since any noisy activity in large, concentrated areas close to residences might be regarded as a nuisance and an intrusion upon privacy, playgrounds at multi-story projects could be sited at some distance from the housing units. This arrangement, however, might be inconvenient for both children and adults.

Among big buildings, point blocks with only three or four dwelling units per floor offer more internal privacy than do long ones, such as slab buildings, because fewer people have occasion to pass by the individual dwellings. Accordingly, the occupants of the 15-story point blocks at Schüttaustrasse in Vienna probably enjoy more privacy than do the occupants of the long five-story buildings on the same site.

In discussing the relationship between building spacing and privacy, it is difficult to separate interior spaces from external site design. While privacy generally increases with spacing, it is not the distance between buildings so much as the use of adjoining areas that contri-

butes to privacy. The privacy of a dwelling unit is determined by indoor considerations, particularly the room layout in the same and facing buildings. Apartments in low buildings and those near the ground floor of high buildings are effected by an additional consideration - the use of outdoor areas immediately adjacent to the buildings.

INTENSITY AND USABLE OPEN SPACE

Intensity variations influence open space in much the same way they influence the aspect of privacy. Open space easily accessible to individual dwelling units is a requisite for housing designed for families with children. Therefore, the intensity-open space relationship is of special importance for this category of housing.

An increase in density often results in higher coverage and taller buildings, both of which are a drain on open space. While the most usable and preferred open space is at ground level, supplementary space can be provided in the form of balconies and roof areas. Such supplementary spaces are common in European housing. At the two projects on Thebes Street in Athens, every apartment has two balconies and in addition, the roofs of all buildings have laundry facilities. Perhaps the most dramatic effect of an increase in density is the resultant allocation of open space for parking purposes. Surface parking, though less desirable than other types of automobile storage, is usually the most economical and most popular. As open space gets swallowed up by increases in density, either space standards will have to be cut or remaining open space will have to be multi-purpose and accommodate a combination of activities.

The relationship between coverage and open space is direct. An increase in coverage (unless density remains very low) almost always causes a significant decline in housing quality with respect to usable open space. The loss of space due to higher coverage, just as in the case of higher density, can be compensated for by providing balconies and roof work and recreation areas, and at the ground level, by designing whatever space there is for a variety of uses. Where occupants have access to outdoor facilities at some distance from their apartments, the alloting of on-site open space, particularly for recreational purposes, is not an important housing program consideration. High coverage is not a detriment and does not reduce housing livability in this case. Manhattan House in New York with a density of 160 dwelling units per net acre, the highest of all the projects I visited and one of the highest coverages, 35%, is an example

of this type of high income housing.

Increases in floor area ratio, like density and coverage, result in a decrease in usable open space. The remedies are also similar. Balconies, roof work and recreation areas, and underground garages can be supplied to overcome the deficiencies in open space due to high floor area ratios. Kips Bay Plaza in New York with a floor area ratio of 2.8 retains a large amount of usable open space by accommodating virtually all of the parking in underground garages.

Building type and size directly influences open space. Private, easily accessible open space at ground level can be planned for occupants of single-family detached houses and row houses, but such space is virtually out of the question for occupants of high-rise buildings. The space at the base of tall residential buildings is generally communal, not private; its accessibility is determined by the height of the building and the distance from the various individual dwelling units to the ground. For these reasons, a two-story row house would be rated more livable than a two-story building with separate dwellings on each floor, even though the amount of ground space per occupant might be the same for both buildings. Some European housing projects provide private outdoor space in the form of allotment gardens for the occupants of high-rise buildings. In Rotterdam, the occupants of the multi-story buildings of Pendrecht, Zuidwijk, and Lombardijen projects have allotment gardens in Zuiderpark which is within one mile of the housing areas.

Space around and between buildings on a site must be well planned for both functional and aesthetic reasons. If buildings are spaced too closely together or the site is too crowded, the open space will be insufficient to accommodate all the activities - public, private, active and passive - of the tenants. What space there is will also probably be inaccessible to many. If buildings are too far apart, the appearance of a site may suffer, even though the amount of open space is abundant. The site design will lack unity and focus. The appearance of a site is judged in part by the treatment of open areas and how these in turn relate to building spacing and masses. Perhaps the most aesthetically satisfying and the most livable is a site with a variety of spaces, differing in size and location. The open spaces at Clamart, on the outskirts of Paris, have been well designed both functionally and aesthetically.

INTENSITY AND INDIVIDUALITY

Intensity influences the opportunities for individuality - self-expression through design - for both the site designer and occupants. The greater the restrictions imposed by intensity standards, the less free the design. Intensity measures could in fact dictate design by making certain solutions unfeasible.

Densities between seven and 30 dwelling units to the net acre do not hinder individuality. At this range attached units can be built with internal spaces made identifiable through various external design techniques such as setbacks, different facade treatments, separate entrance doors, etc. All of these methods are utilized at Tower Hill Manor in St. Louis, a low density two-story row housing project. At high densities opportunities for individuality are more restricted. Techniques for identifying individual units and the choice of building type itself are extremely limited.

Building types designed with outdoor ground spaces as private extensions of the indoors offer the greatest freedom to individual design. As far as size is concerned, the bigger the building in terms of height or length, the more difficult the task of providing individuality. A modicum of individuality visible on the exterior can be achieved through the use of large balconies. However, if a building is very big, the mass of structure will obliterate any attempts at individual design expression. Such attempts will be confined to the planning of interior spaces.

INTENSITY AND DIVERSITY OF HOUSING TYPES

Both high and low densities tend to inhibit diversity of building type. A high density program requires the construction of multi-story structures, often identical, restricting efforts at diversity to architectural and site treatment. Likewise, at low densities there is little variety of building type; diversity is again limited to minor changes in individual building design. At a range of approximately 20 to 70 dwelling units to the net acre, diversity of large projects is possible through a mixture of high and low buildings which average out to a medium density. The projects of Karaburma and New Belgrade in Belgrade, Comasina, Milan, and Sarcelles near Paris are all examples of large developments with a wide variety of dwelling types and an average medium density.

There is no inherent relationship between site size and diversity. How-

ever, small sites often appear to have greater diversity than large ones. This is particularly true when a small site is surrounded by different housing types. The larger the site, the more obvious any deficiencies in site planning are, and the more objectionable the monotony of buildings. One means of achieving diversity for a large site is to involve a number of architects and construction firms in a collaborative program of development. La Vallette in Turin and Western Addition in San Francisco, 125 net acres and 33 net acres in size, respectively, were developed according to this method. For both projects the work of individual designers was coordinated by a chief architect or board of review, thereby creating diversity within the framework of an over-all orderly plan.

An obvious relationship exists between building type and size and diversity. Diversity is contingent upon a variety of housing. Without it, little or no real diversity is possible. A row of identical two-story attached units appears less repetitious than a row of identical twenty-story buildings. They create different impressions owing primarily to the element of size. If a housing program calls for the construction of identical units, some degree of diversity can be created through architectural and landscaping techniques. Both architectural techniques and a variety of type and size contribute to the diversity of Feltre in Milan and Cité les Courtillières in Paris. The buildings range from three to 12 stories in height, from point blocks to long slabs (one 2400 feet) broken by curves and angles.

INTENSITY AND LOCATION

Density seems to have little influence on location. Rather the influence is exerted in the opposite direction: location influences density. Central city locations, where land costs are high, are developed with high density housing; in outlying locations, where land costs are lower, housing for occupants with approximately the same income is less dense. In New York City, for example, the central city projects of Kips Bay Plaza, Park West, and Manhattan House have higher densities (122, 142 and 166 dwelling units per net acre, respectively) than the outlying project, Fresh Meadows, whose density is 23.

The relationship between size and location, here meaning on-site characteristics, is an indirect one. The natural, inherent characteristics of a site such as topography, vegetation, drainage, etc. may inadvertently be damaged in the storage and operation of heavy building equipment and materials or they may deliberately be destroyed to flatten the

land to reduce construction costs. The amenities of a small site seem to be more vulnerable than those of a large one. The greater the space, presumably the more ease in maneuvering and storing heavy equipment and in addition, the more likelihood that suitable land for construction will be available in its natural state. If a site has no particularly distinguishing features, a large piece of ground, again by virtue of size, offers more opportunities than a small one does for creating interest through artificial topography and landscaped open spaces. The man-made hills at Sarcelles near Paris, a site of 175 net acres, are an example of large site landscape possibilities.

In the evaluation of any site design, the appropriateness of buildings to a site and vice versa is always a consideration, regardless of location. The influence between building type and size and location operates in two directions. In a specialized program such as housing for the aged, the building type and size, one-story row units for instance, might be selected in advance of the site. A central city location for these buildings might be less satisfactory than a more quiet location, away from noise and danger of traffic, with facilities for passive recreation. The Sequoias, 30 miles from downtown San Francisco, is a project of one-story buildings entirely reserved for the aged. On the other hand, if a program stipulates the construction of tower apartments, the selection of an appropriate location is an entirely different matter.

Ideally, all types of housing should take advantage of, or at least not violate, any natural amenities of a site and should also blend, not clash, with the general character of surrounding neighborhoods.

INTENSITY AND PROXIMITY TO COMMUNITY FACILITIES

Density influences the availability of community facilities in a very precise manner. An increase in density, an increase of people in a given area, creates a demand for facilities which is often met at close hand or even on-site. The more people, the greater the demand; the closer together they live, the more convenient the facilities. There is a limit, of course. If the intensity of development is such that little or no space remains for non-residential use, then community facilities may not be conveniently located. General community facilities - schools, recreational facilities, shops, churches, etc. - are commonly planned for on sites of large multi-family housing projects in both the United States and Europe. Specialized facilities such as theaters, indoor recreational facilities, medical services, etc. are sometimes pro-

vided on-site if a project is both large and dense. New Belgrade, which is actually a complete new city in itself, has a wide range of community facilities at the neighborhood level, a neighborhood comprising about 40 acres with a net density of just over 50 dwelling units per acre.

While building type and size has no direct or necessary influence on the proximity of community facilities, the latter seem to be more accessible to large buildings than to small ones. Sometimes they are located in the basements or on ground floors of buildings themselves. In the Lijnbaan precinct of Rotterdam, for example, the housing blocks, which are three, ten, and thirteen stories in height, have shops and offices on ground floors.

INTENSITY AND SAFETY AND HEALTH

Since many of the regulations which control the intensity of residential development were originally motivated by the desire to protect safety and health, it follows that the two are closely related.

If an increase in density involves the construction of tall buildings with minimum spacing between them, the amount of light and air available to housing units, particularly those on the lower floors, is reduced. The variation in the livability of apartments measured in terms of the supply of light and air is sometimes reflected in the differential rent schedule for identical units on lower and upper floors of the same building. If an increase in density manifests itself in an increase in the number of automobiles on a site, the potential for accidents also becomes greater.

The relationship between site size and safety and health is not a very direct one. However, if a site is in a section of a city containing industries or major traffic arteries, its size can be significant. Housing on a large site may be less exposed to the nuisances and dangers of such a location than housing on a small site. The greater the space, the more opportunities for planning internal buffers and arrangements of buildings providing maximum protection. On a small site some protection is ensured by facing the buildings inward and letting them act as walls to block out any safety hazards. Ping Yuen Annex in San Francisco and Manhattan House in New York are examples of central city housing projects on small sites which have ground level play areas protected from heavy traffic on surrounding streets.

Increases in coverage and floor area ratios and decreases in space and spacing all tend in varying degrees to reduce the safety, health and general over-all livability of housing projects. Of the three, coverage has the least impact. Floor area ratios are probably the most accurate measure of health and safety standards because these ratios take into account both coverage and bulk and, indirectly, spacing.

Only when viewed together with other intensity measures does building type and size relate to safety and health aspects of housing livability. An estimate of the effect of a high-rise on safety and health must include the space and vehicular circulation around its base and the height and spacing of adjoining buildings. In spite of the influence of all these interacting intensity measures, light, air and safe internal space can be ensured on most sites by thoughful site planning. One way is to face housing inward on protected courts.

INTENSITY AND CIRCULATION

The density of a proposed project is one of a number of considerations in planning site circulation. Since each site presents individual problems, it is difficult to generalize about the density-circulation relationship. Increases in density generate additional movement on a site which, in turn, must be borne by the vehicular roads and pedestrian paths. The higher the density, the greater the movement on a site, and the greater the strain on circulation facilities.

The relationship between site size and circulation is obvious. The larger the site, the more space available for the development of an efficient circulation system. Two examples of large sites with good circulation systems are Domaine de Beauregard near Paris which is over 90 net acres in size and Park Merced in San Francisco, more than 175 net acres. The circulation facilities of a small site may be rather arbitrarily fixed by a space shortage and also by the network of streets and sidewalks already in existence around the site. Under such circumstances, the site designer does not have much freedom in planning a new site.

INTENSITY AND AUTOMOBILE STORAGE

An increase in density through an increase in the number of persons on a site automatically produces a need for additional automobile parking

facilities. At high density housing, parking spaces almost always fall below the desired ratio of one space per dwelling unit. High land costs and accessible public transportation combine to keep parking facilities low at central city housing. Projects I visited in city centers in the United States have from zero to about 50% parking. Those at outlying locations, where land is presumably cheaper and densities are lower, all have at least one parking space per dwelling unit.

Site size itself affects automobile storage. A large site offers more opportunities for flexible parking arrangements than a small site. One of the best surface parking arrangements in terms of convenience to dwelling units and appearance consists of a number of small lots scattered throughout the site. These small lots can be located close to dwelling units and are less conspicuous than a few big paved lots.

Coverage and floor area ratios relate to space, and in this context automobile storage space, in a similar manner. An increase in either of these two intensity measures results in a corresponding decrease in space for parking. When high coverage and high density exist in combination, a scarcity of automobile storage space is particularly noticeable. Under such circumstances costly underground garages must be built or parking ratios will fall well below the desired 100%.

INTENSITY AND BLENDING OF NEW HOUSING INTO ITS SURROUNDINGS

In analyzing the influence of intensity on the blending of new housing into its surroundings, the critical factor is the intensity of development of these surroundings. If new housing is too dramatic a departure from the intensity of neighboring older areas, blending will be extremely difficult. For example, a new 13-story apartment building cannot very successfully merge into an area of two-story row houses. I am not suggesting that the status quo be preserved. The demand for new dwelling units and the quality of existing housing have to be weighed. What I am suggesting is that designers take into account how the new and the old fit together. When an entire residential pattern needs to be altered, new and radically different housing can set the pace and scale for intensity of development. In this case the problem of blending is secondary since older areas themselves will be rebuilt over time to match or harmonize with the new projects. When there is no anticipated pattern change and new housing cannot be built at the prevailing intensity of the area, the best way of achieving a blend is through details of architectural and site construction.

The task of blending new housing whose intensity of development is significantly different from surrounding older housing is alleviated somewhat if the new site is large. A large site has space enough to accommodate housing with a range of intensities and to permit a gradual transition from existing intensities at the periphery to a much different one at the core. The Hannover project of Hemmingen-Westerfeld is an example of careful blending. Though the site is medium sized, the blending principle is applicable. Two-story row houses are placed at the edge and 8-story towers are located in the middle of the site. On a small site, a transition may still be possible, but it would be more abrupt.

INTENSITY AND SITE DETAILS

The only influence intensity has on site details is in their selection and wear. All housing sites, regardless of intensity of development, incorporate certain details, especially utilitarian ones - lighting fixtures, fences, curbing, etc. At sites with intense development, often only strictly utilitarian details are planned and decorative ones such as flower gardens, shallow pools, and intricate paving are omitted. The elimination of decorative details at such sites may be prompted by the following: a shortage of open space; the rapid deterioration of these details due to heavy use and site traffic; and the need for and cost of their maintenance.

INTENSITY AND VIEWS FROM AND TO A SITE

Intensity of development in itself neither creates nor destroys views. If a view from some dwelling units in a housing project is lost through a decrease in building spacing or an increase in density and coverage, poor site planning, not intensive development, is the real cause. Building type and site location, however, do have some bearing on views, at least on potential ones. Multi-story buildings allow panoramic views from a site. In addition, since tall buildings are visible from a distance, they often constitute the view of a site. In the example of Red Rock Hill in San Francisco, a group of buildings, most of them from 7 to 12 stories high, on an elevated site commands fine distant views. A different combination of building type and location is illustrated in the Laclede Park project in St. Louis. Here two-story units on a flat site are clustered to create closed views.

CONCLUSIONS

The relationship between intensity of development and housing livability is not a simple one. By nature the two are inherently disparate. Intensity can be expressed in objective terms, whereas livability is essentially subjective and personal. Furthermore, it is not always possible to isolate single measures of intensity and aspects of quality; often the relationship involves combinations of factors, all operating simultaneously.

The measures of intensity vary in their influence on multi-family housing quality. Of the five, the most influential are density and building type and size. This has been widely recognized and is substantiated by my research. A third important influence on quality, one which in my view has not received sufficient attention, is site size. In all three cases, it is impossible to establish norms suitable for all circumstances. Since each housing program and site is unique, there is no "best" density, building type and size, and site size. The ranges

I observed in connection with this study are as follows: density - from 6.5 to 166 dwelling units per net acre; building type and size - from one-story row houses to 21 story high-rise buildings; and site size - from 1.4 to 710 net acres. Judging or comparing the livability of the projects on the basis of these statistics alone is not very meaningful.

Housing quality is not uniformly affected by intensity of development. Of the aspects of quality referred to in this study, those most directly affected are privacy, open space, individuality, diversity, safety and health, and automobile storage facilities. Those least affected, if at all, are location, site details, and views. Circulation, community facilities, and blending of housing are influenced under certain conditions, mainly those brought about by high intensity development. It is at the upper levels of intensity that livability in general is most seriously affected and threatened. High densities, floor area ratios, coverage, and big buildings do not automatically reduce quality. However, they impose a difficult but not impossible task upon the designer.

CHAPTER FIVE: CONCLUSIONS

This chapter sets forth some broad conclusions based on field observations and subsequent analysis of the data that I collected in the course of this study. It also includes some specific recommendations relating to multiple housing and for continual study of ways to improve design quality.

HOUSING INTENSITY STANDARDS AND HOUSING QUALITY

Standards specifying limits for the intensity of housing development, first adopted to correct some of the ills of early multiple housing in the United States, have not proved to be a panacea. All too many examples exist of new projects which have been built to conform to current site development standards yet which rank low in quality. Some people - critics and designers alike - view standards not as a cure, but as a cause of housing shortcomings. They charge that the misuse of standards has stifled imagination and has produced rubber-stamp, stereotyped designs and solutions. Many of the people with whom I talked during the course of this study were reluctant to discuss intensity controls, fearing that even a discussion might be misinterpreted as an implication that design and quality are derived by a manipulation of specific figures governing occupancy, site size, building height or type, etc. All disapproved of institutionalizing the design process, and favored less rigidity in the application of controls.

No one argues for the abandonment of standards. Clearly some type of development controls are necessary, especially in urban areas. But

the plea for greater flexibility in their application is heard on both sides of the ocean. It seems to me that standards can serve only as guides, general outlines for building, and, in addition, as checklists for reviewing housing proposals, when such a review is required. To be of maximum value, standards should be periodically examined, revised, and brought up to date. Since no particular one in isolation is entirely adequate and reliable, standards should be used in combination and above all, with discretion.

With a better set of standards, flexible enforcement, more consideration of the essential ingredients of quality, and the granting of more freedom to designers, it is hoped that the quality of multi-family housing will be improved.

UNIQUENESS OF EACH HOUSING SITE AND H

One obvious reason for less rigid standards is tha
jectives, and programs are rarely identical. Th
cause occupants are not the same and because loc
of sites vary from project to project.

> "Experience with siting regulations during the
> dicates the essential need for more flexibility i
> which these regulations are based as well as i
> tion, bearing in mind the unique characteristic
> sites and the new large scale of residential dev

involve several hundred units."[1]

Even a cursory examination of the site plans in Appendix One illustrates the uniqueness of sites. These plans include central city locations and suburban ones, small projects of less than 10 acres and others over 100 acres, flat sites and hilly sites, some areas rich in natural amenities and some with man made topography.

The great range in project size is a reflection of the variety of housing programs. The site plans show projects with as few as 40 units and one with 12,000 units. Some are self-contained neighborhoods in themselves and others consist of a few residential structures. Since programs are geared to the needs of occupants, it follows that different needs require different programs. The more that is known or predictable in advance about housing occupants (age, income, family size, etc.), the more specific the program and, presumably, the more satisfactory the solution since the designer is better able to tailor residences to suit occupants when the latter are known. Two recent multi-family housing proposals, both designs of Schwarz and Van Hoefen, St. Louis architects, are examples. At one, Delor Park, the designers have planned a variety of outdoor spaces - play areas for young children adjacent to individual dwelling units and larger spaces for older children at some distance from residences. The other project, Mansion House, is designed for families without children. The open spaces here are paved areas where adults can congregate. Both illustrate the principle of planning with specific needs of specific future tenants in mind. If such specialized needs are not known in advance of occupancy, an adaptable site plan would permit the inclusion of additional features at a later time as the demand arises.

A design based on a specific and unique program which allows for future adaptations and which, in addition, recognizes the special characteristics of the project site, is likely to be one which is highly livable, providing many of the aspects of quality elaborated upon in this report. On the other hand, any design based on a standardized program which does not differentiate among sites and occupants, and which does not allow for future adaptations will result in low quality housing.

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[1]H. P. Oberlander and F. Lasserre. Annotated Bibliography - Performance Standards for Space and Site Planning for Residential Development. (Bibliography No. 19.) Ottawa: National Research Council, Division of Building Research, 1961, p. iii.

"PROJECT" APPEARANCE

It is precisely this low quality housing which has come to give the term "project" a negative connotation, at least in the United States. It is, of course, not the name as such that is objectionable, but the cold, styleless, and monotonous buildings and sites to which it refers.

The appearance of multiple housing could be improved, and at the same time the stigma of the term "project" removed, by more attractive and distinctive designs which allow for spontaneity and, even more important, which blend into their building and landscape environments. I have discussed blending in previous chapters and I repeat it here because I regard it of major significance and urgency.

ASPECTS OF QUALITY

While I have singled out blending, and might add individuality as the two most seriously neglected aspects of quality identified in Chapter Three, I consider all twelve of them fundamental to the success of any housing project. I have deliberately avoided trying to establish any order of importance or any quantitative measurements for them. Even though it is possible, for instance, to calculate how many square feet of space are necessary for play areas for a given number of children or how far from dwellings automobile storage facilities can conveniently be located, most of the twelve aspects can not be stated in numerical terms. The danger in attempting such calculations is that they might be translated into standards and regulations which in their precision and misapplication could restrict design.

Though the list of quality aspects is by no means definitive, I hope that it may prove useful as an aid or general reference to persons responsible for design.

IMPORTANCE OF DESIGN

With the hope that my list of twelve aspects of quality may be helpful in appraising housing site design goes the recognition that there are no absolutes in the field of design. What constitutes good design is often controversial since each of us - layman, architect, tenant, developer, etc. - brings to the discussion his own set of values, both implicit and explicit. Disagreement, however, should not serve as an

excuse for evading the task of building livable, aesthetically pleasing housing, and not merely shelter. This is an investment in the national interest. Better housing makes for better cities.

> "Let us make sure...that men and cities prove of equal worth. It is not, after all, only beauty itself, but also the striving for beauty that lifts men up and makes a civilization."[2]

SOME SPECIFIC PROPOSALS

The following proposals stem from some current practices which not only contribute to housing quality but which also are within the range of most multi-family project budgets.

Although there is no inherent reason for it, I have observed that in practice large sites frequently lack high quality design. As a consequence, my first proposal is to use small and medium sized sites and not large ones, if possible. Economies accrued in mass construction could still be retained by scattering similar or even identical buildings on a number of these sites throughout a city. In this way materials could be purchased in quantity and the same design repeated, without producing the eyesore uniformity so typical of large sites. There is a limit, of course, to how many small sites with similar buildings can be dispersed throughout a city without causing it to look the same in all quarters.

When there is no alternative to a large site, I suggest using one with an irregular shape. Irregular pieces of land often appear smaller than square or nearly square ones and, in addition, facilitate blending since they provide more contact with older sections of a city than square sites do.

I recommend developing a large site by dividing it into a number of small sub-sections. This division of a large site into small units, each planned by a different team of designers but carefully coordinated to ensure order and unity, is very common in The Netherlands and Italy. I also observed some redevelopment projects in the United States, Western Addition in San Francisco and Mill Creek in St. Louis for example, where this practice has been followed.

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[2]August Heckscher, "Challenge of Ugliness," Journal of The American Institute of Architects, (Vol. 47, No. 6, June, 1962), p. 56.

A fourth proposal applies to open space. Greater utilization of balconies, roofs, and outside corridors for work and recreation areas should be considered for housing, such as central city high rises, with a lack or sparsity of open space at ground level. Construction precautions insure safety and privacy for elevated spaces.

A final proposal concerns dwelling ownership. Occupant-owned multiple housing, another common European practice, offers important advantages over rental housing. All owner-occupied housing I saw was very well-maintained, undoubtedly attributable to pride of ownership as well as the economic incentive to protect one's investment. Such housing, potentially at least, offers opportunities for custom designed units. With advance knowledge of tenant needs and characteristics, designers can create both individuality and diversity, two important ingredients of livability.

NEED FOR CONTINUED STUDY

In this study I have focused on only a small area of housing, namely design. Within this area I believe that more experimental housing, pilot projects, and competitions are needed. Better housing can not be legislated; it requires the encouragement and support of architects and landscape architects, who have the ultimate responsibility for design.

There is a need for more study of all phases of housing - social, financial, engineering, management, etc., as well as design. The goal of providing high quality multiple housing demands a broad collaborative effort. Recognition of accomplishments, publication of findings, and a general world-wide exchange of information of practices will further the achievement of this goal.

APPENDIX ONE: HOUSING SITE PLANS

Appendix One includes site plans and housing characteristics of 60 projects located in 14 cities representing nine countries. The order is an alphabetical one, according to country, city and project name. European and U.S. projects are listed separately.

The plans are reproduced at one of four scales, one inch equaling either 100, 200, 500 or 1000 feet, in order to facilitate ease of comparison and measurement. The scale is indicated on each plan.

The following development characteristics are listed:

- gross acres
- net acres
- number of dwelling units
- number of persons
- dwelling units per net acre
- persons per net acre
- coverage
- floor area ratio
- number of buildings
- number of floors
- square feet covered by residential buildings
- spacing
- parking facilities
- balconies
- recreational facilities
- non-residential site facilities
- distance to city center
- housing sponsor
- architect
- income of occupants
- date of construction

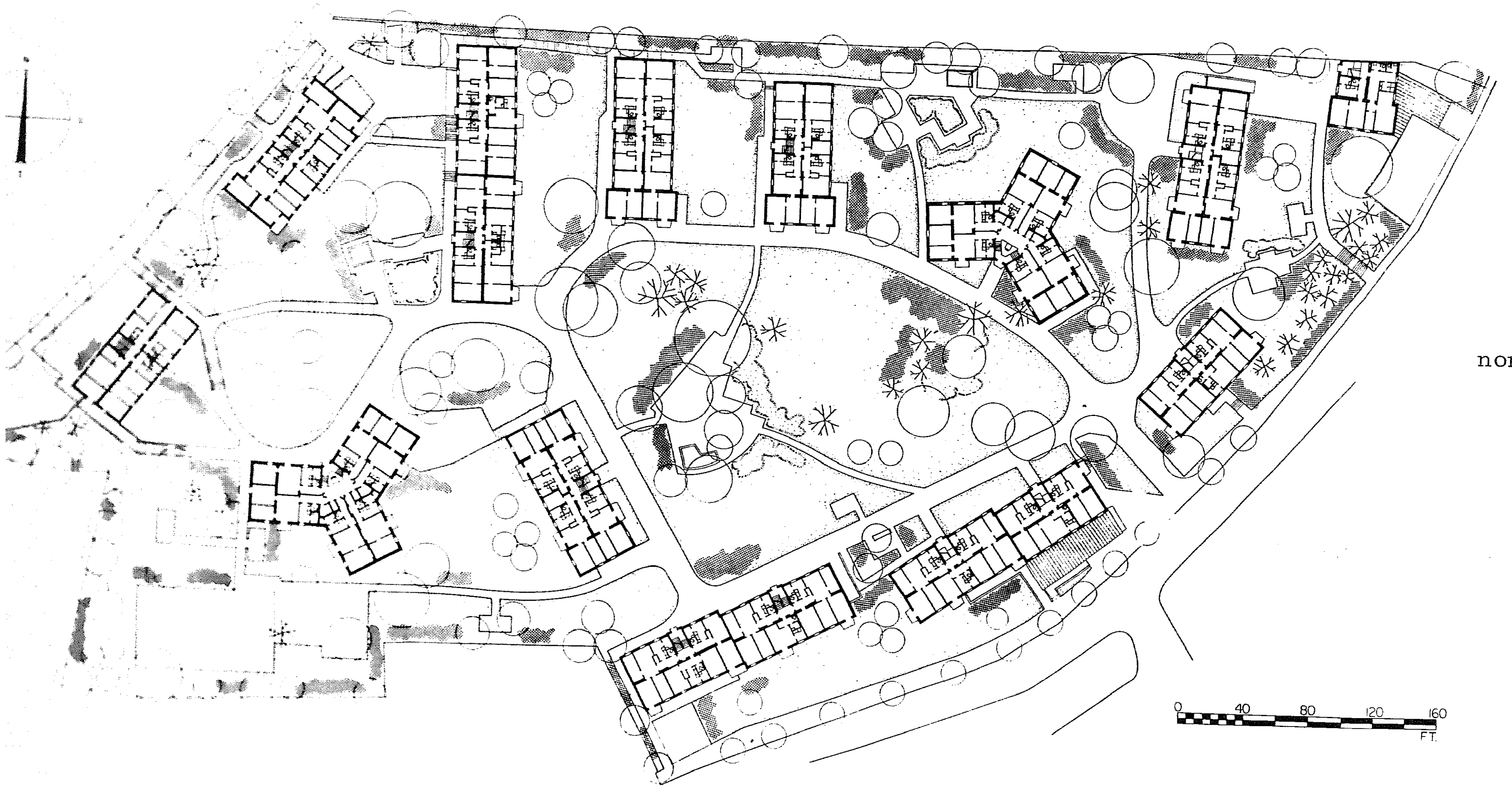
A brief description of each project is also recorded.

DEVELOPMENT CHARACTERISTICS

As many of these characteristics as possible are given for each project. The figures shown are not always exact. Owing to incomplete or conflicting data, they are sometimes rough or compromise approximations. In the case where large projects are built in sections with different coverages and floor area ratios, the highest figure is listed for the project. Spacing represents the minimum distance between residential building faces, not necessarily the shortest dimension between two buildings on a site. Distance is the number of miles between the project and the center of the city, measured in a straight line.

AUSTRIA: VIENNA

POINTENGASSE-ANDERGASSE



65 net acres
203 dwelling units

density: 31 d.u./n.a.

coverage: 18%

f.a.r.: 0.65

buildings: 13
3-6 stories
50,000 sq. ft. covered

spacing: 50 feet

parking: small lots at site periphery
balconies: one per unit
recreation: play lots
passive areas
non-residential: shops
distance: 3.8 miles

architects: Theiss, Jaksch, and Peydl
built: 1956

Variety of building forms on an irregular site. Vehicles restricted to site periphery.

AUSTRIA: VIENNA

SCHÜTTAUSTRASSE

20 net acres
1400 dwelling units

density: 70 d.u./n.a.

coverage: 15%

f.a.r.: 1.0

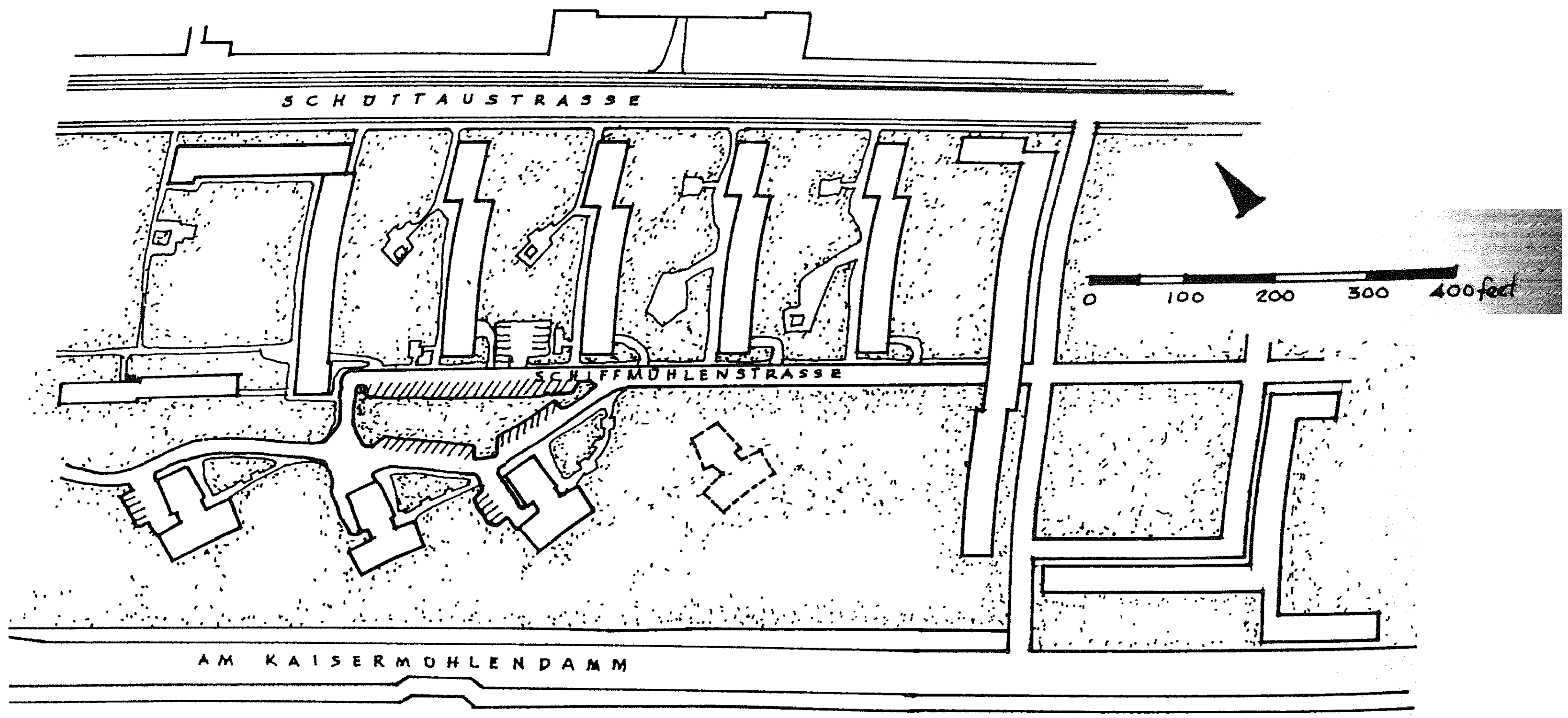
buildings: 13
2-15 stories
130,000 sq. ft. covered

spacing: 120 feet

parking: scattered lots
underground spaces
balconies: one per unit
recreation: playground
tot lots
non-residential: none
distance: 2.5 miles

sponsor: public
architects: Stiegholzer and others
occupants: low income
built: c.1957

Site overlooks Danube River. Convenient to public transportation. One building for the elderly.



ALTON ESTATE
ROEHAMPTON LANE

125 gross acres
115 net acres
1600 dwelling units

density: 14 d.u./n.a.

coverage: 14%

f.a.r.: 1.0

buildings: over 100
1-11 stories
650,000 sq. ft. covered

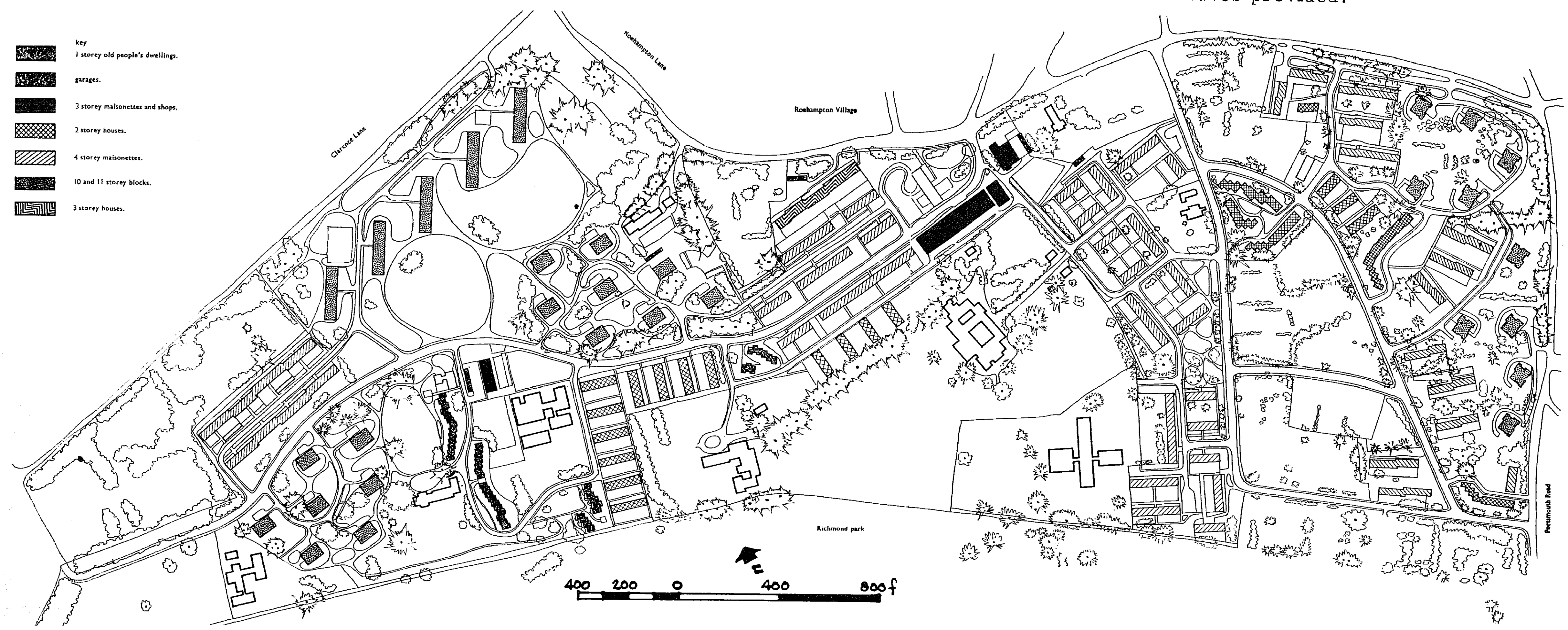
spacing: 60 feet

parking: scattered lots close to housing units

balconies: one per unit
recreation: play lots
playgrounds
large open fields
non-residential: schools
shops
distance: 7 miles

sponsor: LCC
architects: Bennett, Martin, West, Lewis, and others
occupants: middle income
built: started c.1955

Great variety of housing types dispersed on a wooded estate. Convenience shops, schools, housing for the aged among the features provided.



ROEHAMPTON VALE

3 net acres
40 dwelling units

density: 13.5 d.u./n.a.

coverage: 17%

f.a.r.: 0.35

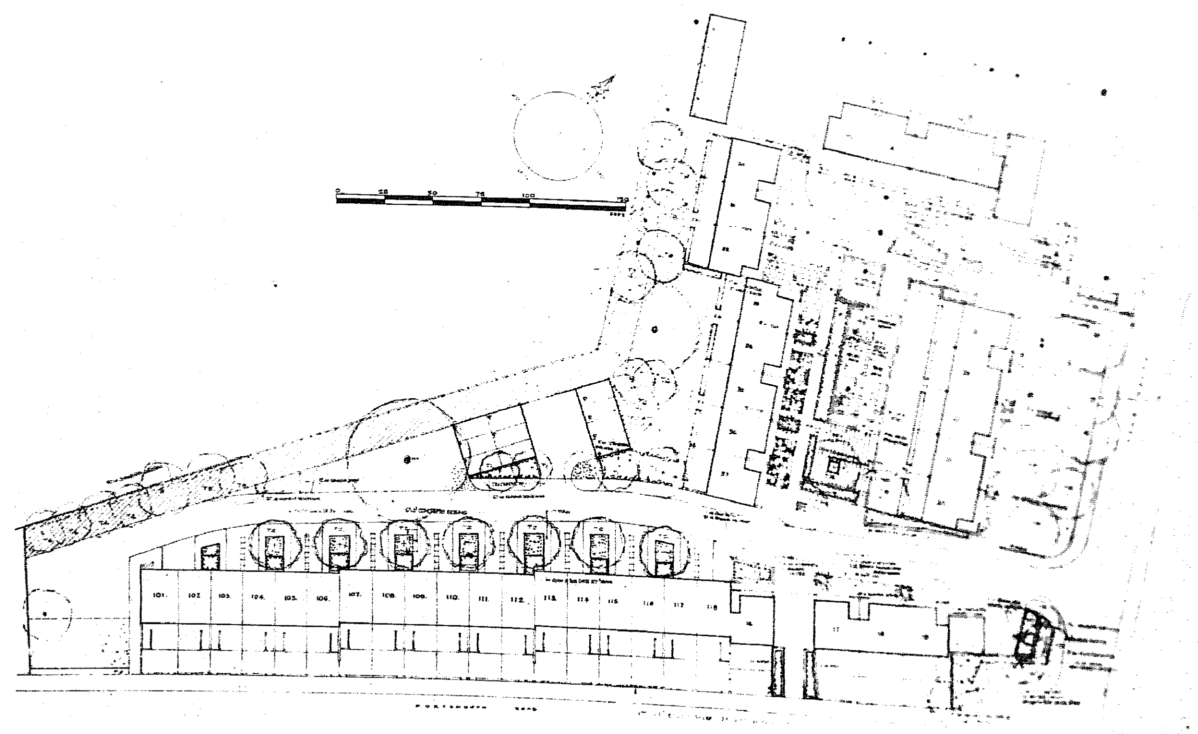
buildings: 6
2 stories
23,000 sq. ft. covered

spacing: 85 feet

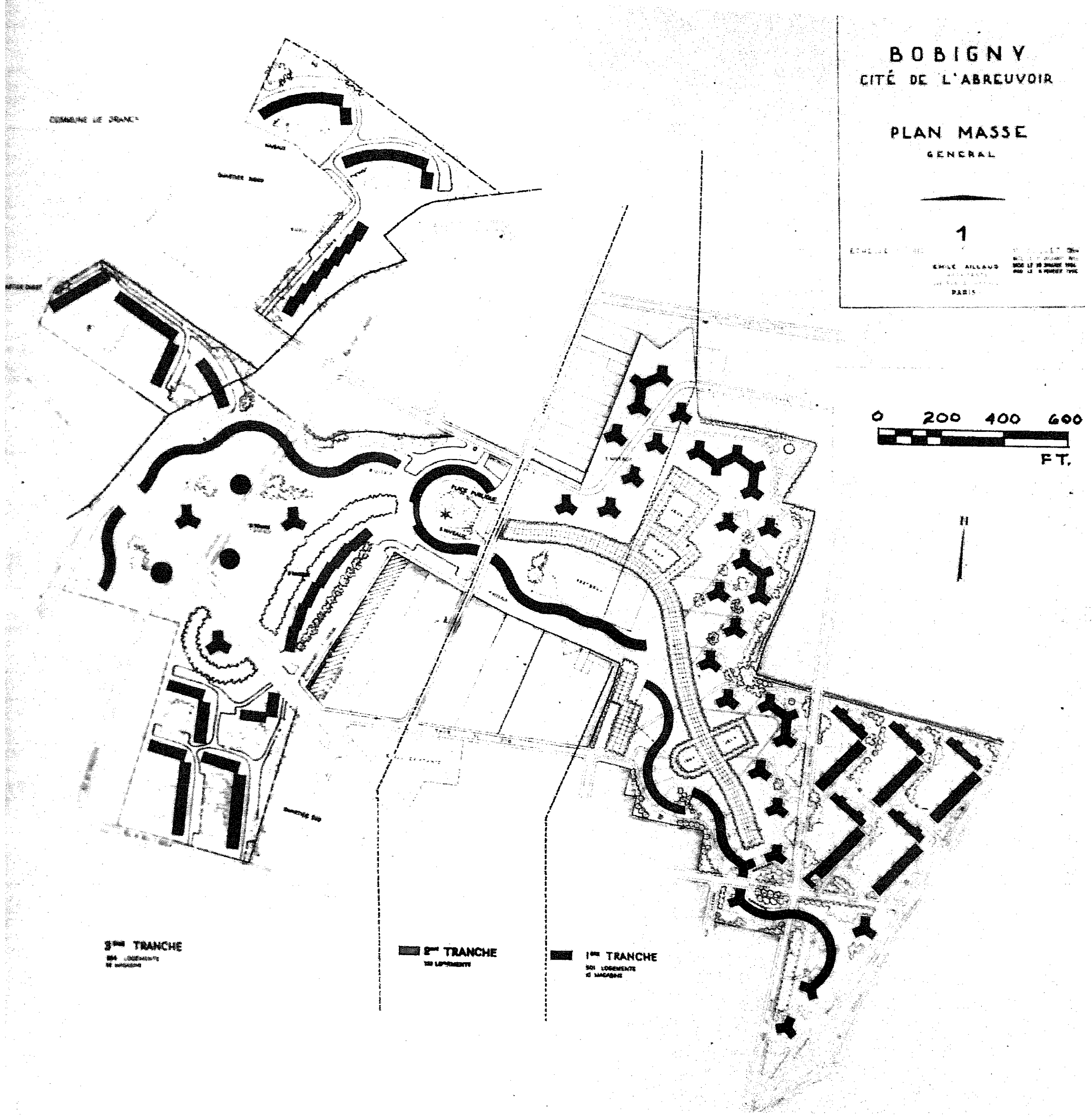
parking: 40 garage spaces
balconies: none
recreation: small play areas
non-residential: none
distance: 7 miles

sponsor: private
architect: Bland
occupants: middle and high income
built: 1960

Private outdoor space for all units. Some buildings clustered around a communal paved area.



CITÉ DE L'ABREUVOIR

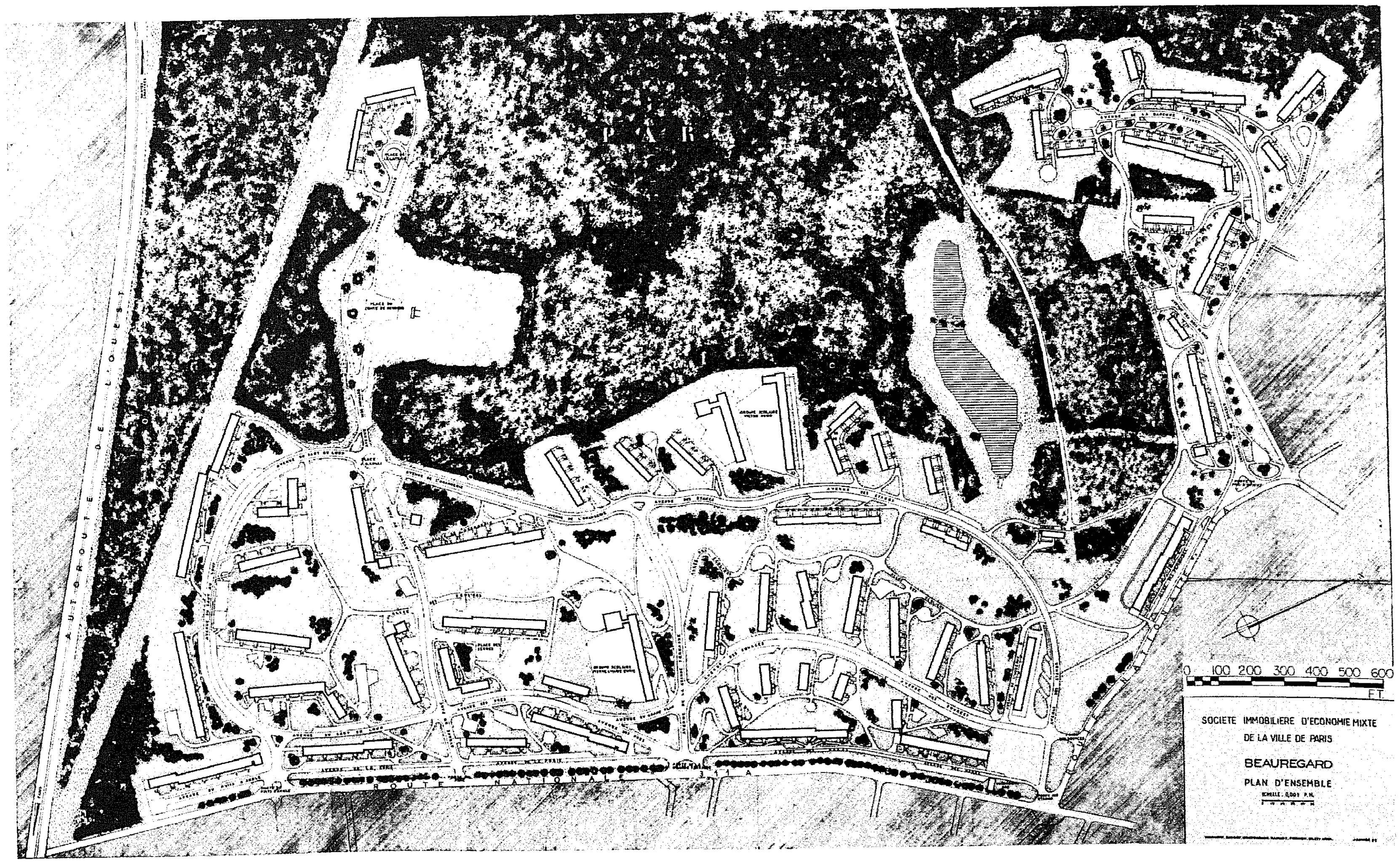


	72 gross acres
	60 net acres
	1500 dwelling units
density:	25 d.u./n.a.
coverage:	17%
f.a.r.:	0.8
buildings:	63
	3-12 stories
	300,000 sq. ft. covered
spacing:	60 feet
parking:	scattered small lots
balconies:	one per unit
recreation:	playgrounds
	sports fields
non-residential:	schools
	shops
	theatre
	etc.
distance:	6.5 miles
sponsor:	public
architects:	Aillaud, Vedres, and others
occupants:	low income
built:	c.1956

Serpentine buildings, point blocks, and other housing types. Large open spaces around buildings.

FRANCE: PARIS AND ENVIRONS

DOMAINE DE BEAUREGARD



110 gross acres
92 net acres
1660 dwelling units

density: 18 d.u./n.a.

coverage: 9%

f.a.r.: 0.3

buildings: 60
2-5 stories
350,000 sq. ft. covered

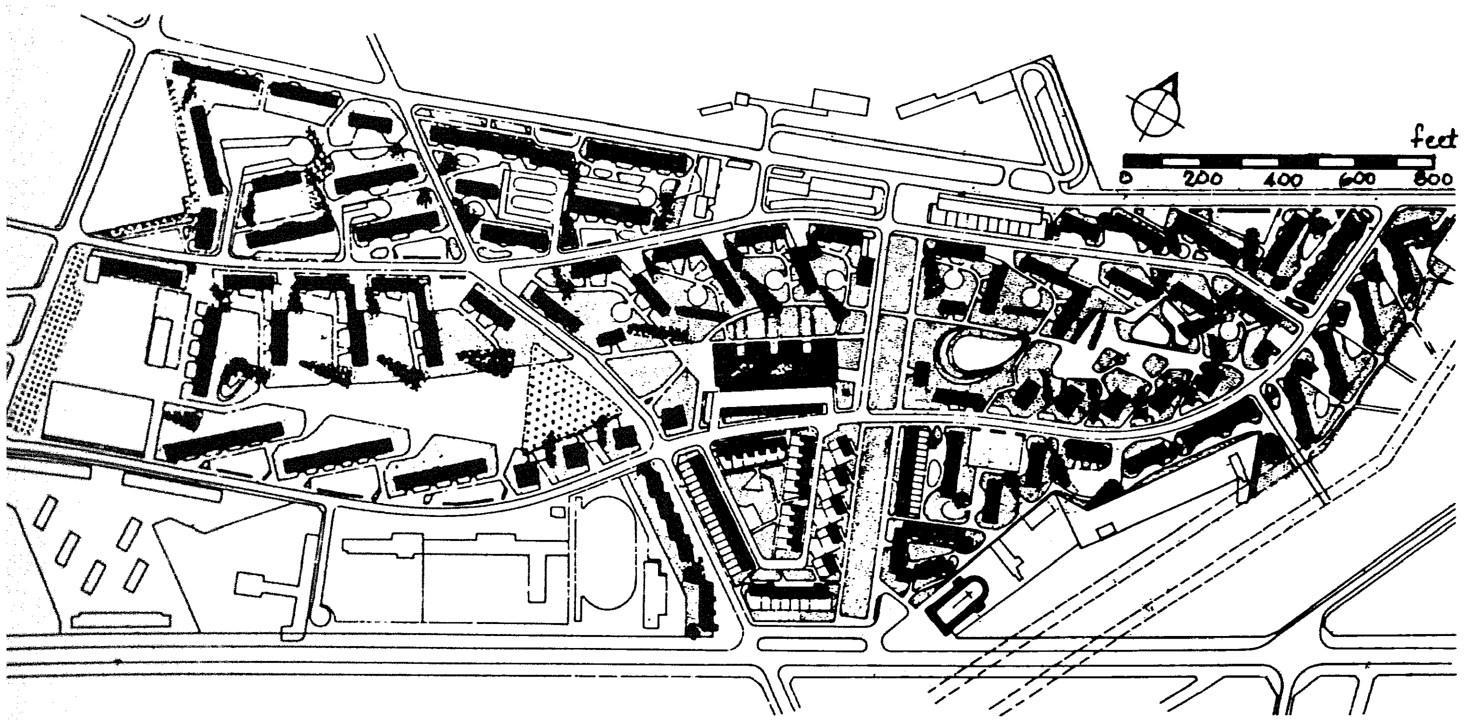
spacing: 70 feet

parking: scattered small lots
balconies: one per unit
recreation: play areas around buildings
large park adjoins site
non-residential: schools
distance: 9 miles

sponsor: public and private
architects: Warnery, Saubot, and others
occupants: low and middle income
built: c.1958

Housing built in a large forest park area. Some cottage units designed for the elderly.

CLAMART



	67 gross acres 62 net acres 2500 dwelling units 7500 persons
density:	40 d.u./n.a. 120 per./n.a.
coverage:	14%
f.a.r.:	0.5
buildings:	90 1-5 stories 380,000 sq. ft. covered
spacing:	60 feet
parking:	minimum
balconies:	one per unit
recreation:	playgrounds
non-residential:	schools shops markets etc.
distance:	11 miles
sponsor:	public
architects:	Auzelle and others
built:	c.1956

Variety of housing types including some units for the elderly.

65 gross acres
53 net acres
1650 dwelling units

density: 31 d.u./n.a.

coverage: 11%

f.a.r.: 0.8

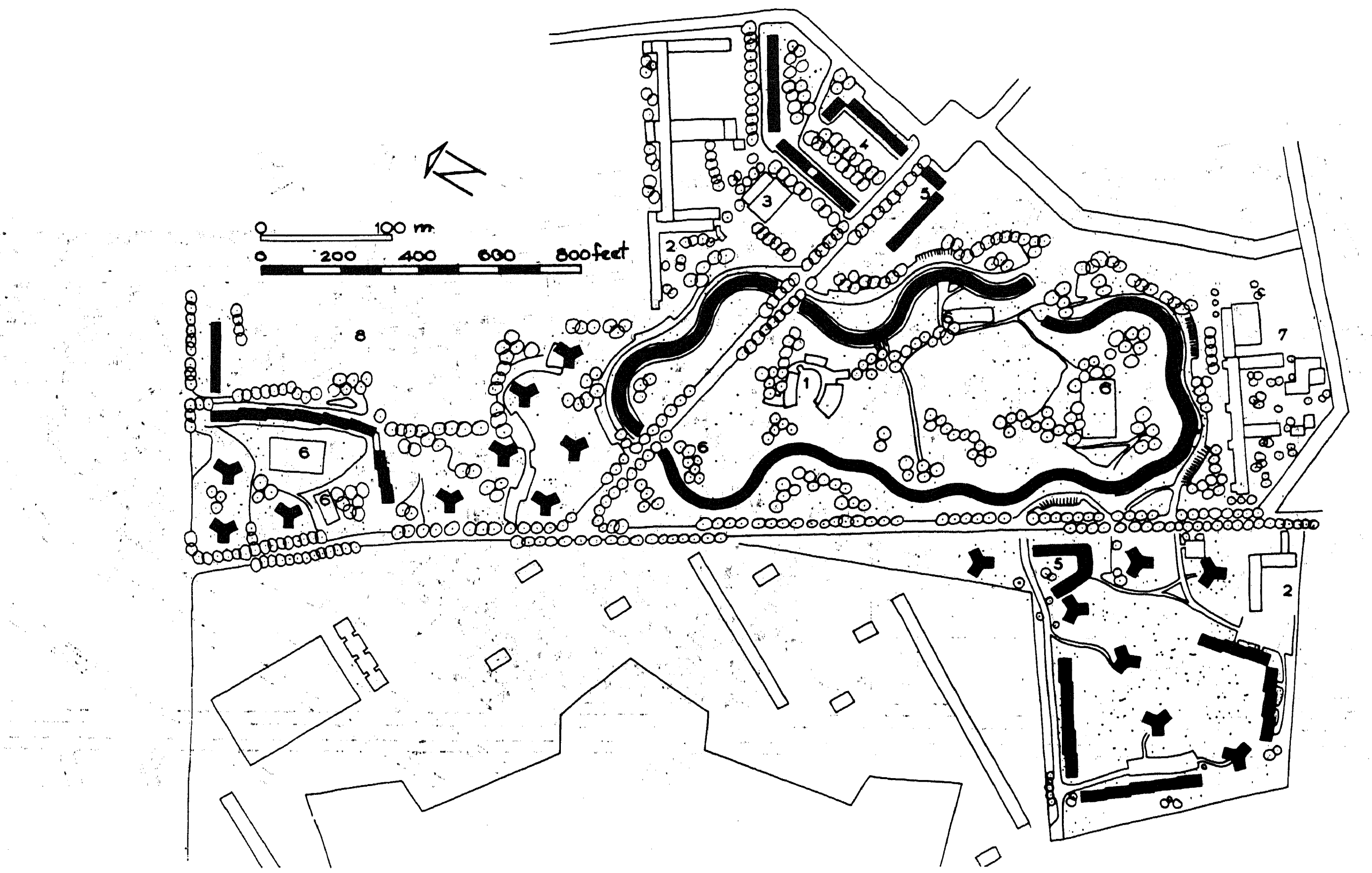
buildings: 33
4, 6, and 13 stories
260,000 sq. ft. covered

spacing: 140 feet

parking: large garage
small lots
balconies: very few
recreation: large open areas between buildings
non-residential: schools
shops
church
etc.
distance: 5 miles

sponsor: public and private
architects: Aillaud and others
occupants: low and middle income
built: c. 1959

One serpentine building 2400 feet long.
Variety of building types and sizes.


0 100 m.
0 200 400 600 800 feet
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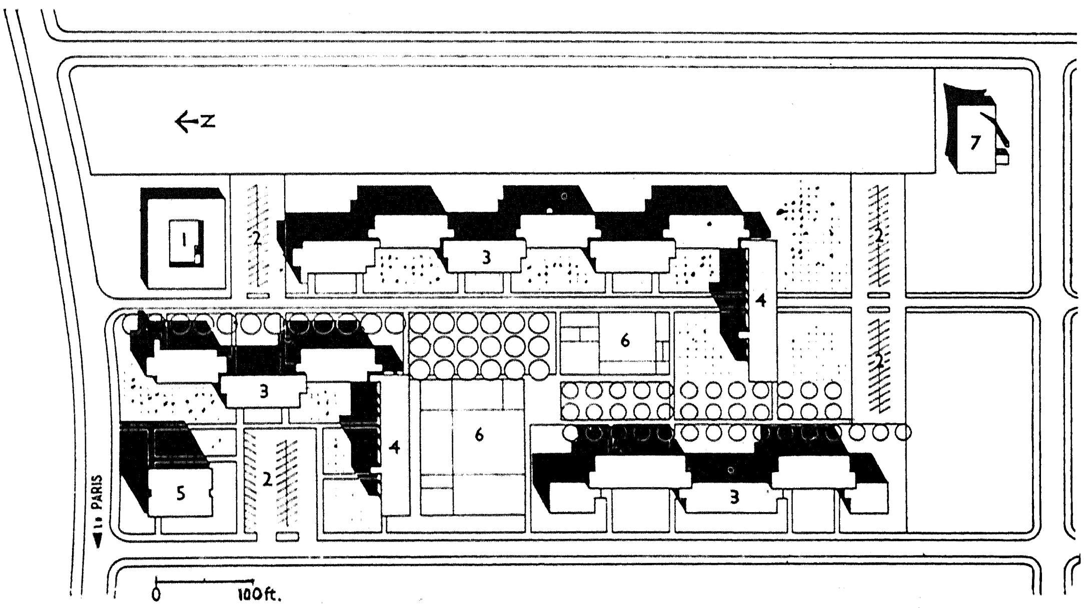
7
8

FRANCE: PARIS AND ENVIRONS

	16.5 gross acres 15.5 net acres 727 dwelling units
density:	47 d.u./n.a.
coverage:	7%
f.a.r.:	0.4
buildings:	17 5 and 7 stories 36,000 sq. ft. covered
spacing:	80 feet
parking:	110 on-site spaces
balconies:	one per unit
recreation:	playgrounds
non-residential:	schools
distance:	5 miles
sponsor:	public
architects:	Candilis and others
occupants:	low income
built:	c. 1956

Rectangular grid planning relected in the building facades.



N
1
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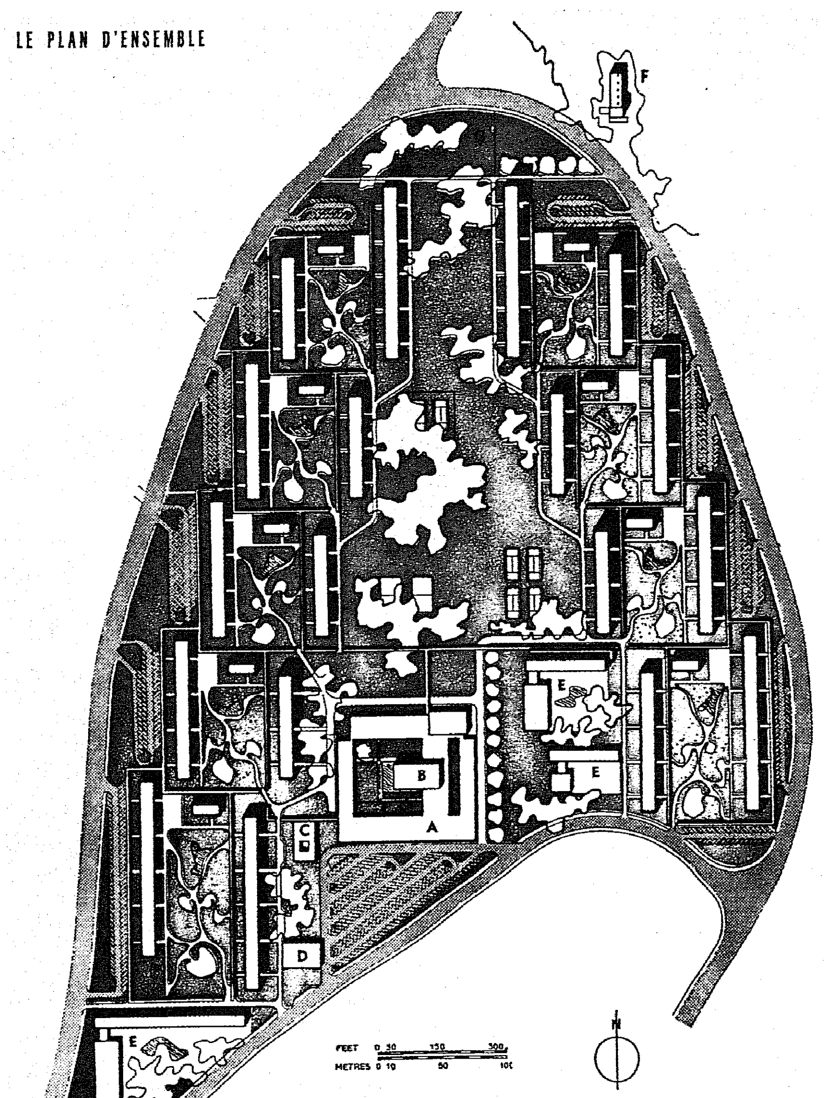
5
to PARIS
0
100 ft.

FRANCE: PARIS AND ENVIRONS

MARLY-LES-GRANDES-TERRES

LE PLAN D'ENSEMBLE



Plan d'ensemble : en grisé, circulation automobile et parkings. A. Centre commercial. B. Salle de spectacles polyvalente. C. Centre médical. D. Station-service. E. Groupe scolaire. F. Centrale thermique. G. Garage à multiples niveaux avec terrasse accessible (600 voitures).

Les neuf unités secondaires sont pourvues de leurs propres jardins et parkings.

71 gross acres
55 net acres
1500 dwelling units
6000 persons

density: 27 d.u./n.a.
110 per./n.a.

coverage: 14%

f.a.r.: 0.7

buildings: 27
5 stories
325,000 sq. ft. covered

spacing: 230 feet

parking: lots at site periphery
several garages
balconies: one per unit
recreation: playgrounds
tennis courts
non-residential: schools
shopping center
etc.
distance: 11.5 miles

sponsor: private
architects: Lods, Honneger, and Beufe
occupants: middle income
built: c.1958

Neighborhood unit planning principl
Vehicular traffic limited to site pe
riphery.

SARCELLES

225 gross acres
175 net acres
6000 dwelling units

density: 34 d.u./n.a.

coverage: 12%

f.a.r.: 0.7

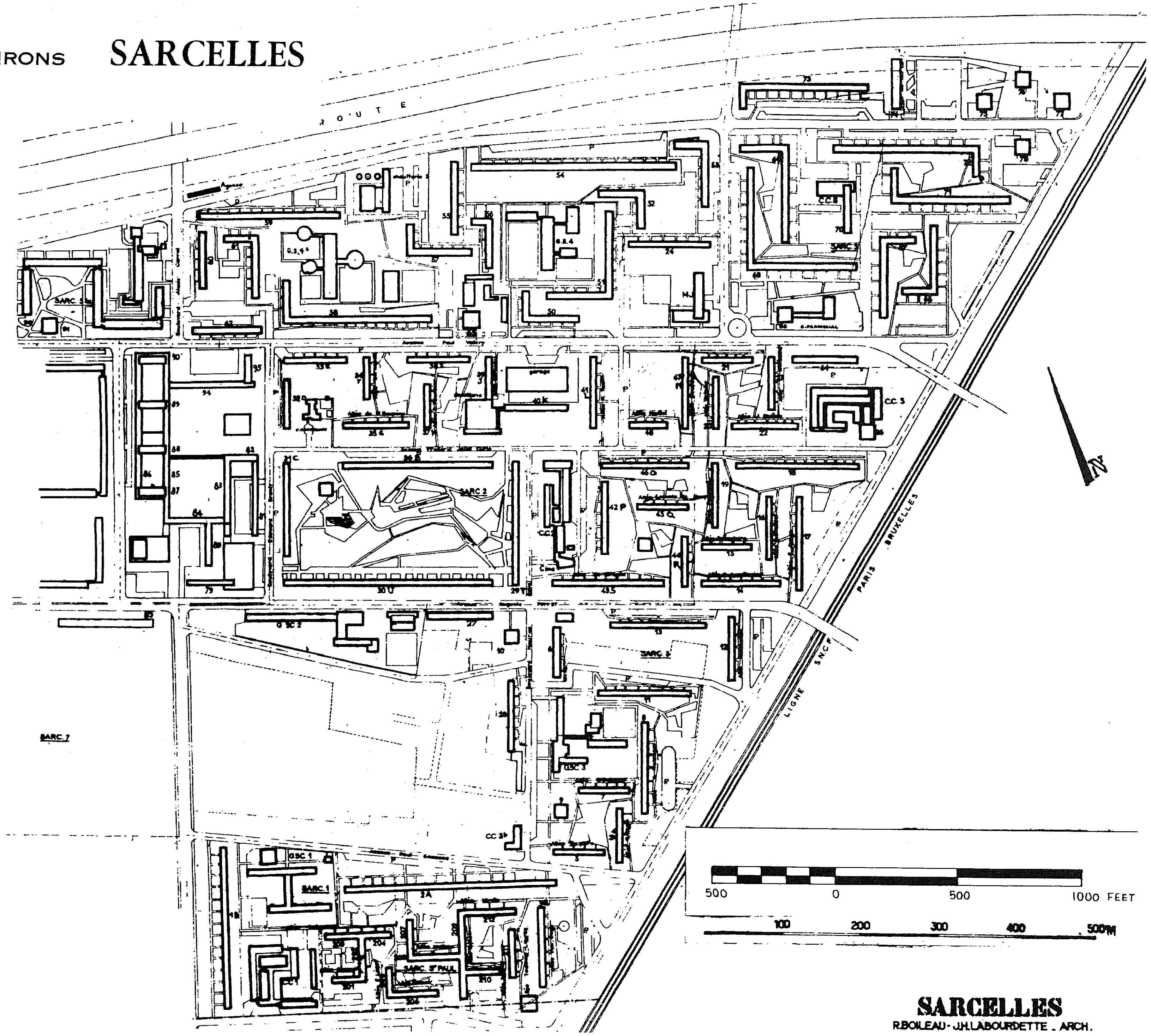
buildings: over 100
4-15 stories
900,000 sq. ft. covered

spacing: 100 feet

parking: scattered lots
balconies: few
recreation: playgrounds
parks
sports fields
non-residential: schools
shops
hostel
etc.
distance: 8.5 miles

sponsor: public
architects: Boileau, Labourdette, and Durand
built: started c.1955

First stage. Completed project to contain 9000 dwellings. Rectangular grid system of site planning with irregular pedestrian walkways and artificial hills in large open areas.



GERMANY: HANNOVER

HEMMINGEN-WESTERFELD

45 gross acres
27 net acres
620 dwelling units
2200 persons

density: 23 d.u./n.a.
82 per./n.a.

coverage: 33%

f.a.r.: 0.65

buildings: 81
1-8 stories
390,000 sq. ft. covered

spacing: 35 feet

parking: 360 garages
spaces on project streets
balconies: one per unit
recreation: small areas around buildings
non-residential: school
shopping center
church
distance: 3.5 miles

sponsor: public
architect: Dellemann
occupants: middle income
built: 1960

Variety of dwelling types - many with private outdoor spaces.

GERMANY: HANNOVER

LAHER KIRCHWEG

24 net acres
462 dwelling units
1600 persons

density: 18.5 d.u./n.a.
64 per./n.a.

coverage: 11%

f.a.r.: 0.4

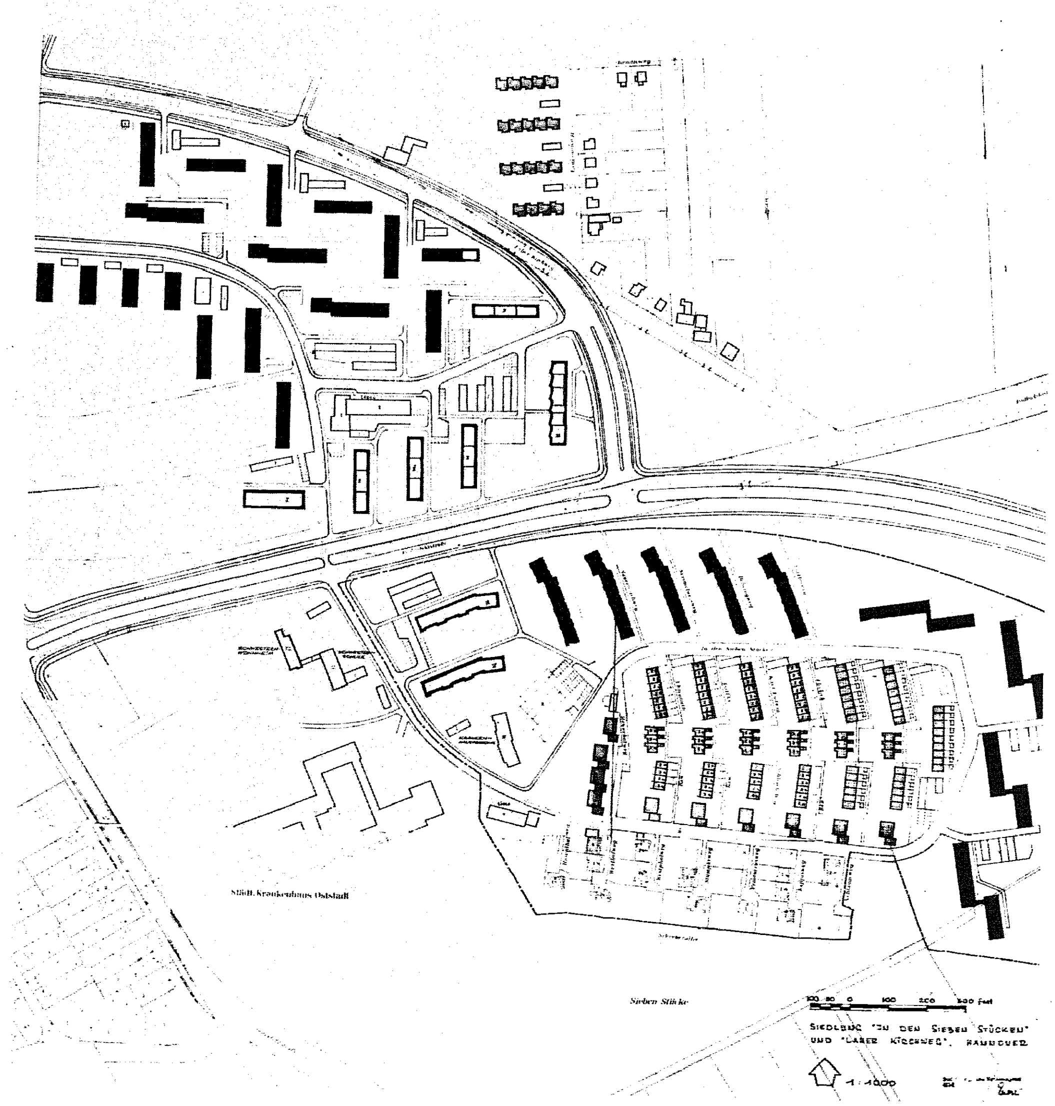
buildings: 23
2-5 stories
120,000 sq. ft. covered

spacing: 70 feet

parking: garages and off-street spaces for one-half the units
balconies: one per unit
recreation: small areas around buildings
non-residential: school
shops
distance: 4 miles

sponsor: public
architect: Dellemann
occupants: low income
built: c. 1960

Buildings clustered around protected open spaces.



35 net acres
581 dwelling units
2000 persons

density: 16.5 d.u./n.a.
57 per./n.a.

coverage: 12%

f.a.r.: 0.35

buildings: 54
1-4 stories
180,000 sq. ft. covered

spacing: 90 feet

parking: garages and off-street spaces for one-half the units
balconies: one per unit
recreation: small areas around buildings
non-residential: school
shops
hospital adjoins site
distance: 4 miles

sponsor: public and private
architect: Dellemann
occupants: middle income
built: c.1958

Tall buildings at site periphery. Low units grouped in central super block with private outdoor areas for individual units.

GERMANY: HANNOVER

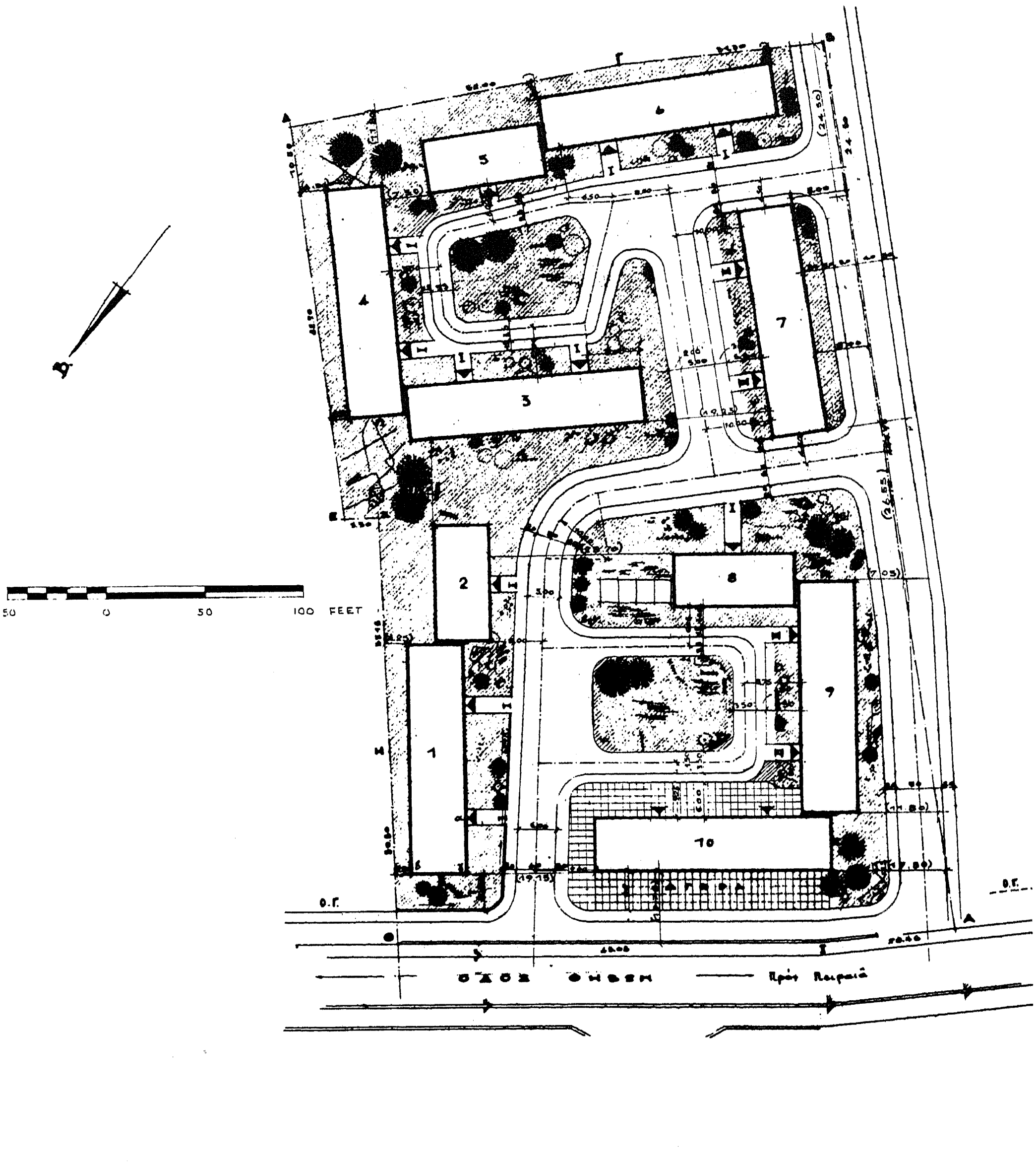
IN DEN SIEBEN STÜCKEN

GREECE: ATHENS

THEBES STREET

	2.8 net acres
	132 dwelling units
	460 persons
density:	46 d.u./n.a.
	160 per./n.a.
coverage:	20%
f.a.r.:	0.8
buildings:	10
	4 stories
	25,000 sq. ft. covered
spacing:	100 feet
parking:	minimum
balconies:	two per unit
recreation:	small play areas
non-residential:	shops
	nursery
distance:	3.5 miles
sponsor:	public
architect:	Skiadaressis
occupants:	low income
built:	c.1960

Skillful site planning solution of a small project. Roof top laundry areas.



1
2
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50 0 50 100 FEET
ΟΔΟΣ ΘΗΒΩΝ
Πρὸς Πειραιᾶ

GREECE: ATHENS

THEBES & THESSALONIKE STREETS

4 net acres
188 dwelling units
650 persons

density: 47 d.u./n.a.
160 per./n.a.

coverage: 23%

f.a.r.: 1.0

buildings: 13
4 stories
40,000 sq. ft. covered

spacing: 50 feet

parking: minimum
balconies: two per unit
recreation: small play areas
non-residential: shops
nursery
community building
distance: 3.5 miles

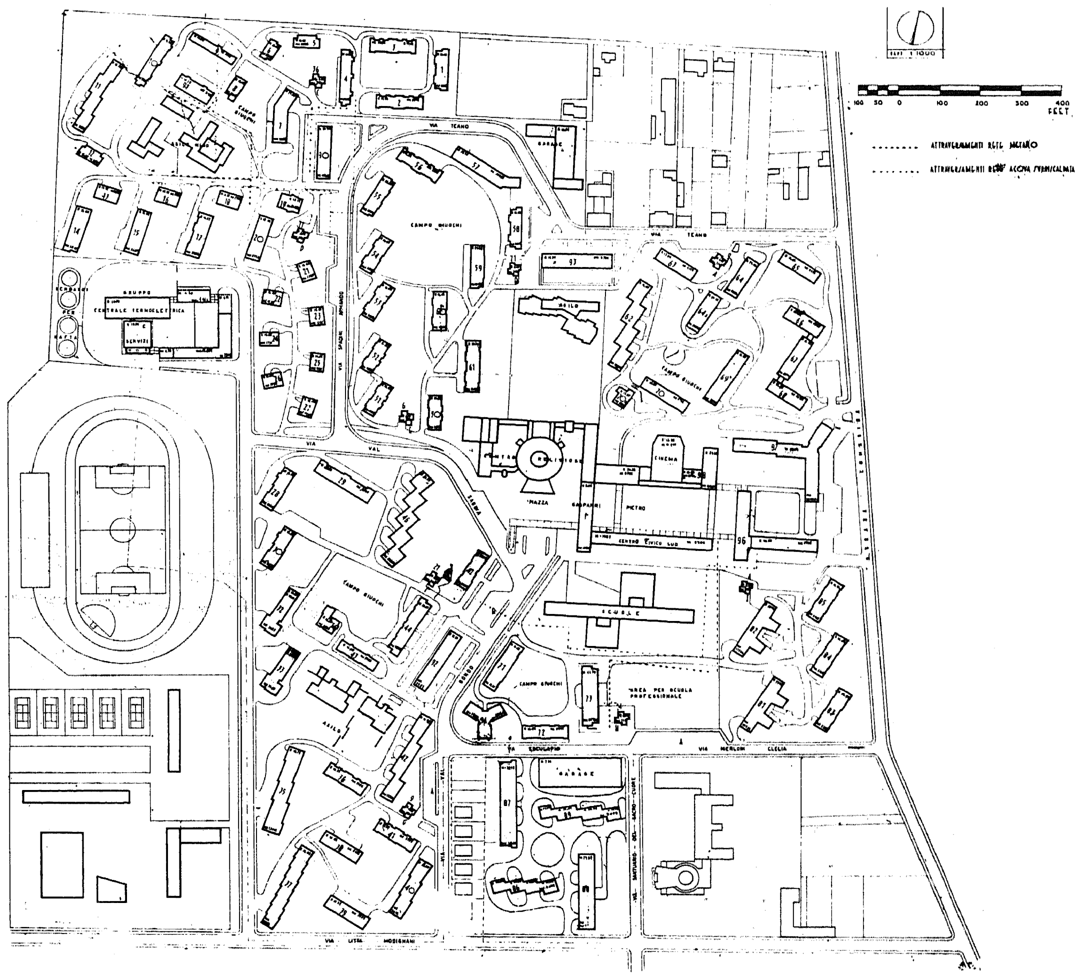
sponsor: public
architect: Skiadaressis
occupants: low income
built: c.1960

Similar buildings grouped to create a variety of spaces. Community area at site center.

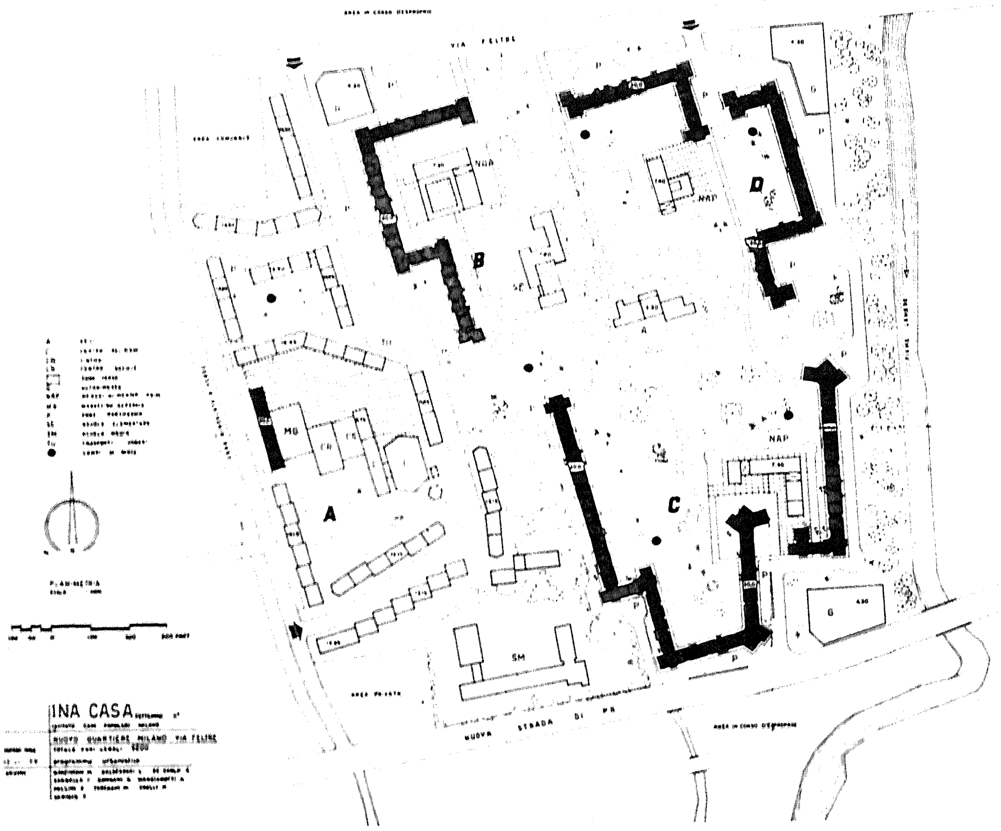
	80 gross acres
	67 net acres
	2510 dwelling units
	11,000 persons
density:	38 d.u./n.a.
	165 per./n.a.
coverage:	14%
f.a.r.:	1.0
buildings:	88
	3-13 stories
	420,000 sq. ft. covered
spacing:	75 feet
parking:	several large garage buildings
balconies:	one per unit
recreation:	play areas
	sports fields at edge of site
non-residential:	school
	shops
	cinema
	civic buildings
distance:	3.5 miles
sponsor:	IACPM
architects:	Rossetti and others
occupants:	workers
built:	1955

Large complex of community facilities to serve project residents.

ITALY: MILAN **COMASINA**



ITALY: MILAN **FELTRE**

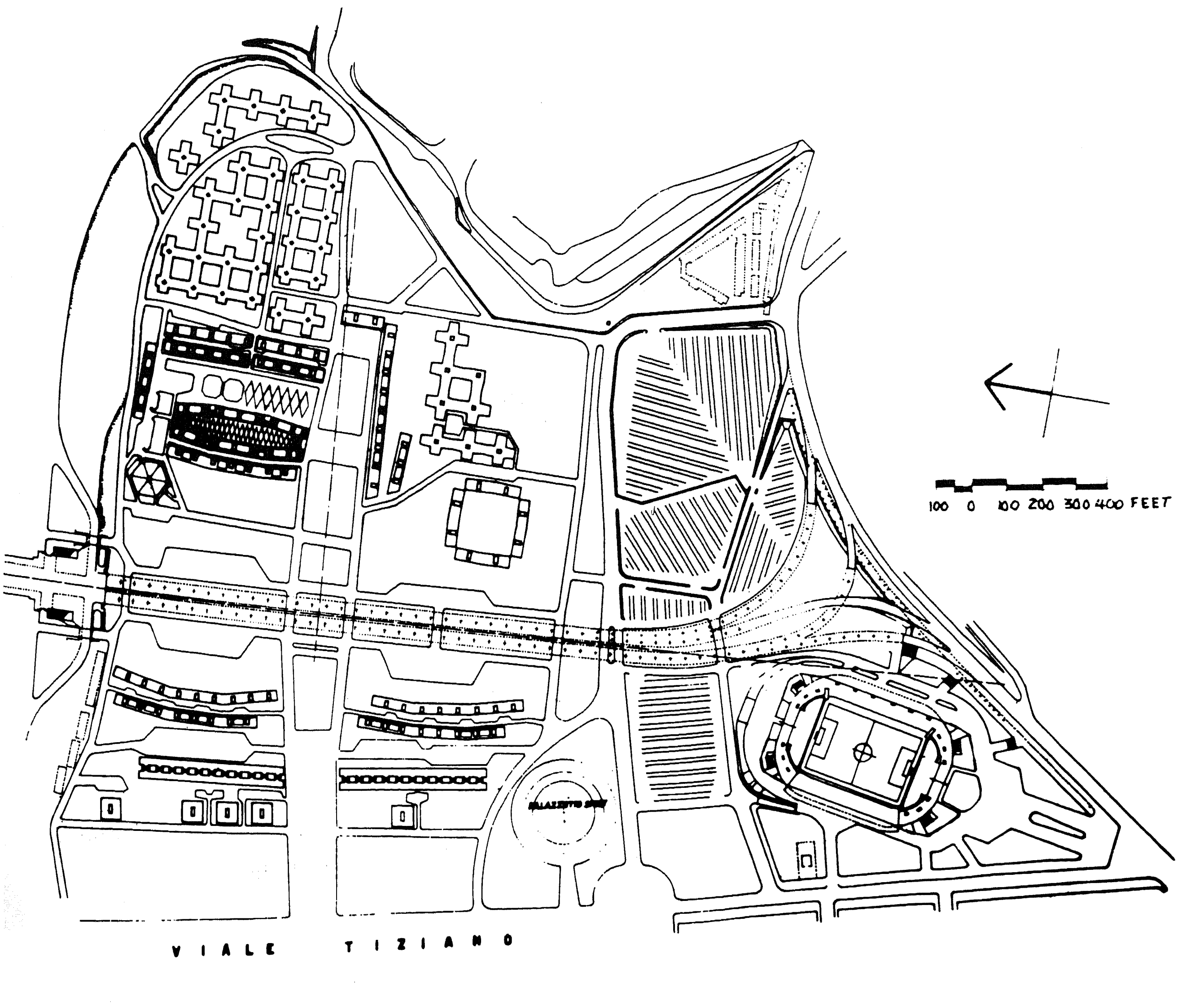


65 gross acres
45 net acres
1725 dwelling units
9000 persons

density:	38 d.u./n.a.
	200 per./n.a.
coverage:	14%
f.a.r.:	1.1
buildings:	17
	4 and 10 stories
	275,000 sq. ft. covered
spacing:	70 feet
parking:	garages at site edge
	some small lots
balconies:	one per unit
recreation:	very large spaces around buildings
non-residential:	school
	shopping center
	church
	cinema
	etc.
distance:	3.5 miles
sponsor:	INA CASA
architects:	Bacciocchi and others
occupants:	workers
built:	c. 1958

Long buildings, one 1450 fe
open space and community

ITALY: ROME

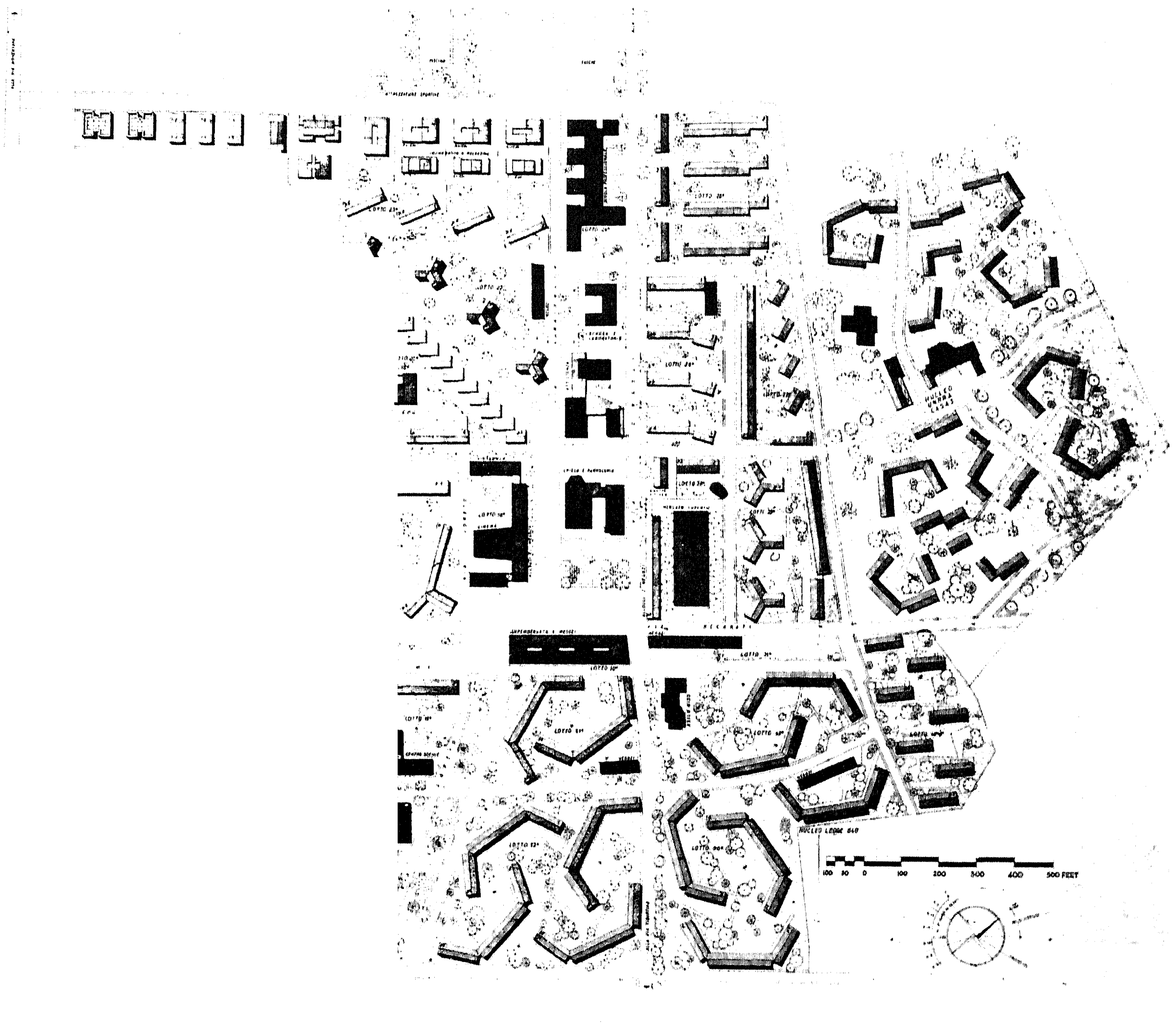


55 gross acres
42 net acres
1450 dwelling units
8000 persons

density:	35 d.u./n.a.
	190 per./n.a.
coverage:	33%
f.a.r.:	1.25
buildings:	2-6 stories
spacing:	40 feet
parking:	minimum
balconies:	one per unit
recreation:	olympic facilities adjoin site
non-residential:	community buildings
	school
	clinic
	shops
distance:	2.5 miles
sponsor:	INCIS
architects:	Libera, Moretti, Cafiero, and Montuori
occupants:	middle income
built:	c.1959

Designed first as housing for olympic contestants and later converted into apartments for permanent occupancy.

ITALY: ROME **SAN BASILIO**



115 gross acres
90 net acres
3368 dwelling units
20,000 persons

density: 37 d.u./n.a.
222 per./n.a.

coverage: 20%

f.a.r.: 0.9

buildings: over 100
4 and 5 stories
800,000 sq. ft. covered

spacing: 40 feet

parking: minimum
balconies: one per unit
recreation: playgrounds
sports fields
non-residential: school
shops
health center
theatre
etc.
distance: 9 miles

sponsor: public
architects: Fiorentino and others
occupants: low income
built: 1957

Variety of housing types clustered around community facilities and open spaces.

80 gross acres
73 net acres
2000 dwelling units
12,000 persons

density: 27 d.u./n.a.
165 per./n.a.

coverage: 17%

f.a.r.: 0.7

buildings: 73
3-7 stories
530,000 sq. ft. covered

spacing: 60 feet

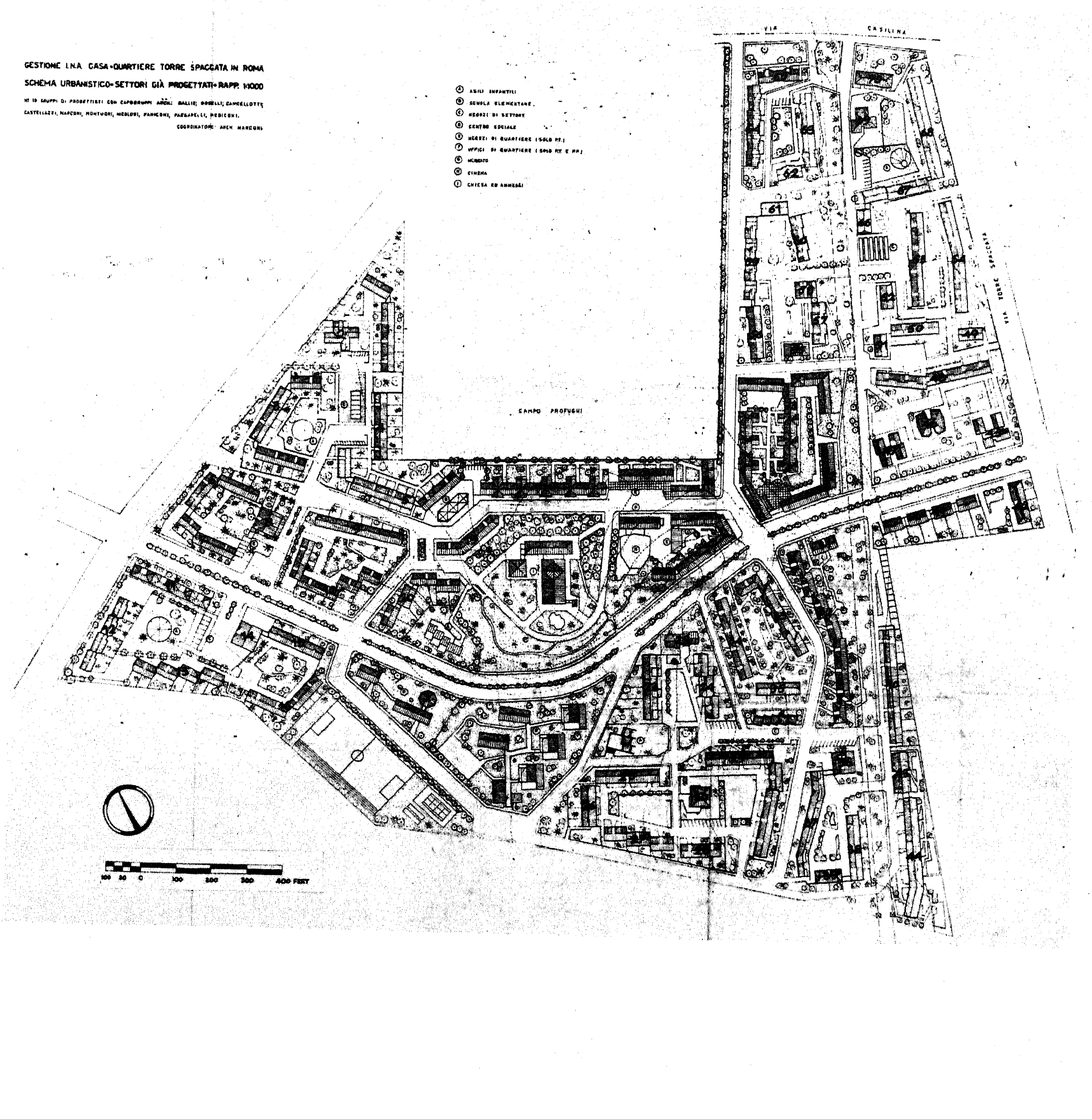
parking: minimum
balconies: one per unit
recreation: play areas
sports fields
non-residential: school
shops
church
cinema
distance: 6 miles

sponsor: INA CASA
architects: Marconi and others
occupants: workers
built: 1961

Variety of building types, heights, and spaces. Clear separation of pedestrian and vehicular circulation.

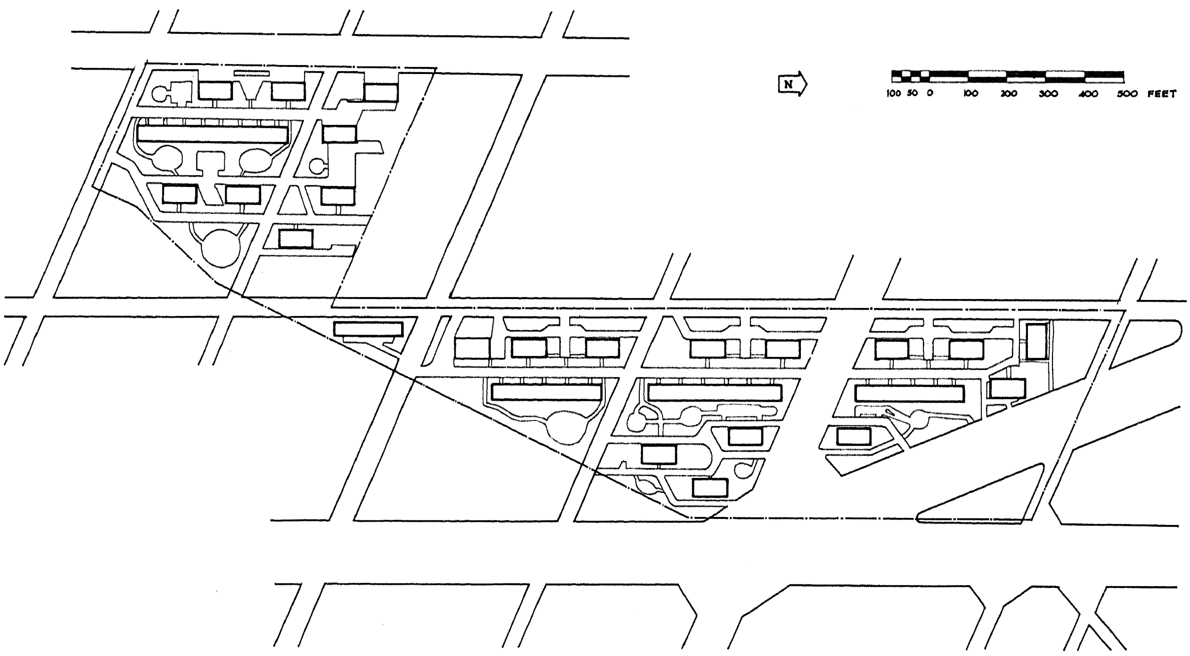
ITALY: ROME

TORRE SPACCATA



ITALY: TURIN

CORSO SEBASTOPOLI



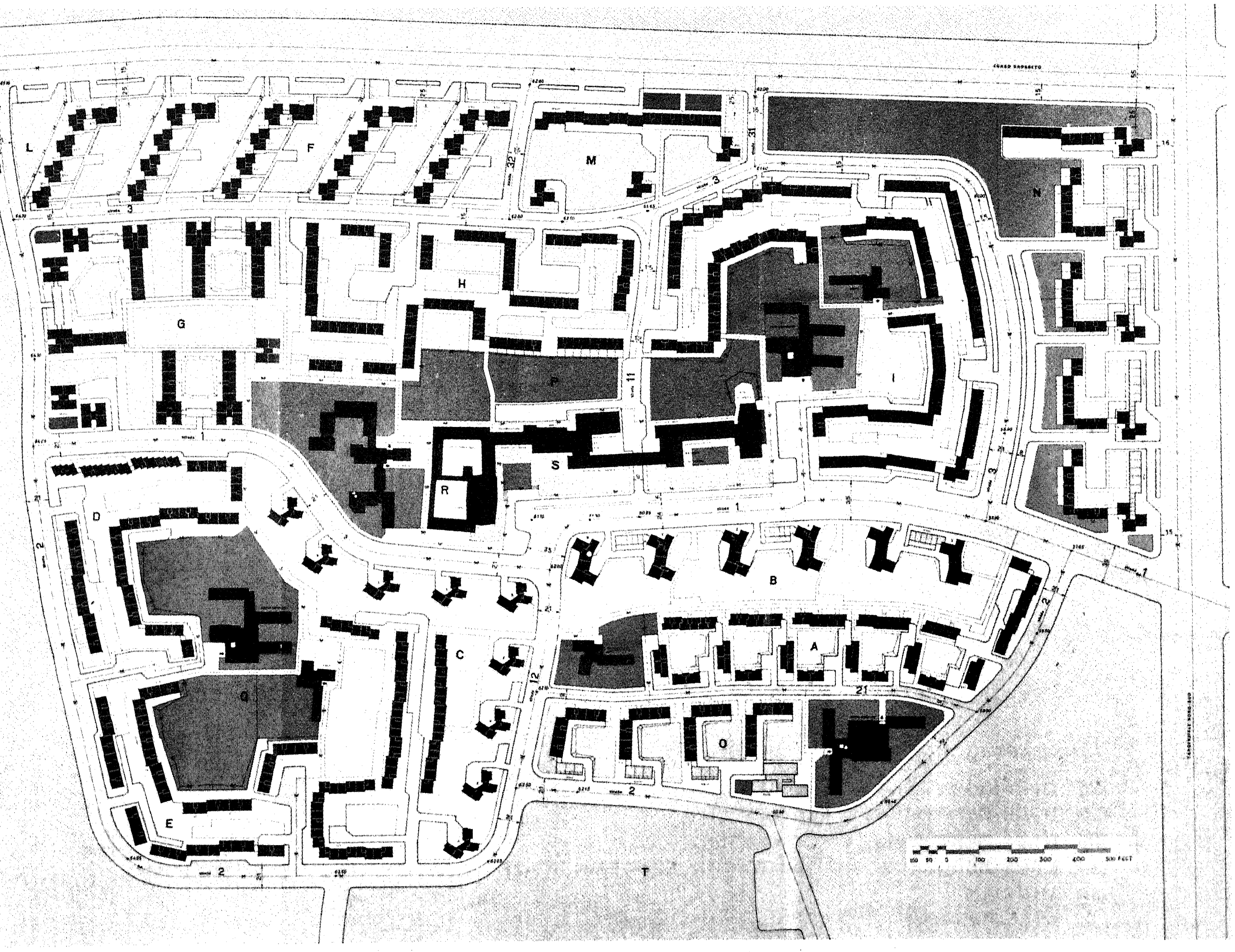
	25 gross acres
	23.5 net acres
	880 dwelling units
	4700 persons
density:	37 d.u./n.a.
	200 per./n.a.
coverage:	14%
f.a.r.:	1.0
buildings:	24
	5 and 9 stories
	140,000 sq. ft. covered
spacing:	70 feet
parking:	scattered small lots
	future underground space
balconies:	one per unit
recreation:	sports facilities adjoin site
non-residential:	school
	shops
distance:	2.5 miles
sponsor:	INA CASA
architects:	Mollino and others
occupants:	workers
built:	c. 1960

Split site makes project appear smaller. Surrounding open spaces are used intensively by project residents.

	160 gross acres
	125 net acres
	3700 dwelling units
	17,000 persons
density:	30 d.u./n.a.
	135 per./n.a.
coverage:	24%
f.a.r.:	1.5
buildings:	over 100
	3-5 and 9-11 stories
	1,300,000 sq. ft. covered
spacing:	70 feet
parking:	small lots at site periphery
balconies:	one per unit
recreation:	play areas
	sports fields
non-residential:	schools
	shops
	cultural center
	religious center
	health facilities
	etc.
distance:	3.7 miles
sponsor:	INA CASA
architects:	Montalcini and many others
occupants:	workers
built:	1962

Open spaces around buildings carefully scaled in relation to building heights and masses.

ITALY: TURIN **LE VALLETTE**




S
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BURGEMEESTER
RÖELL
STRAAT
S
S
E.D.
OONLAGEN
OONLAGEN
HOOFDZAAK EENGEZINSHUIZEN
300 meter
0 200 400 600 800 feet

AMSTERDAM,

GEUZENVELD

330 gross acres
290 net acres
4700 dwelling units
16,800 persons

density: 16 d.u./n.a.
58 per./n.a.

coverage: 33%

f.a.r.: 1.0

buildings: over 100
1-7 stories

spacing: 55 feet

parking: minimum
balconies: one per unit
recreation: regional area adjoins site
non-residential: schools
shops
etc.
distance: 3.5 miles

sponsor: public and private
architects: Dudok and others
occupants: low and middle income
built: started in 1955

One of four garden suburbs on the western edge of Amsterdam. Buildings are grouped in rectangular "L" shaped blocks.

THE NETHERLANDS: AMSTERDAM

OSDORP

820 gross acres
710 net acres
12,000 dwelling units
40,000 persons

density: 17 d.u./n.a.
56 per./n.a.

coverage: 25%

f.a.r.: 0.85

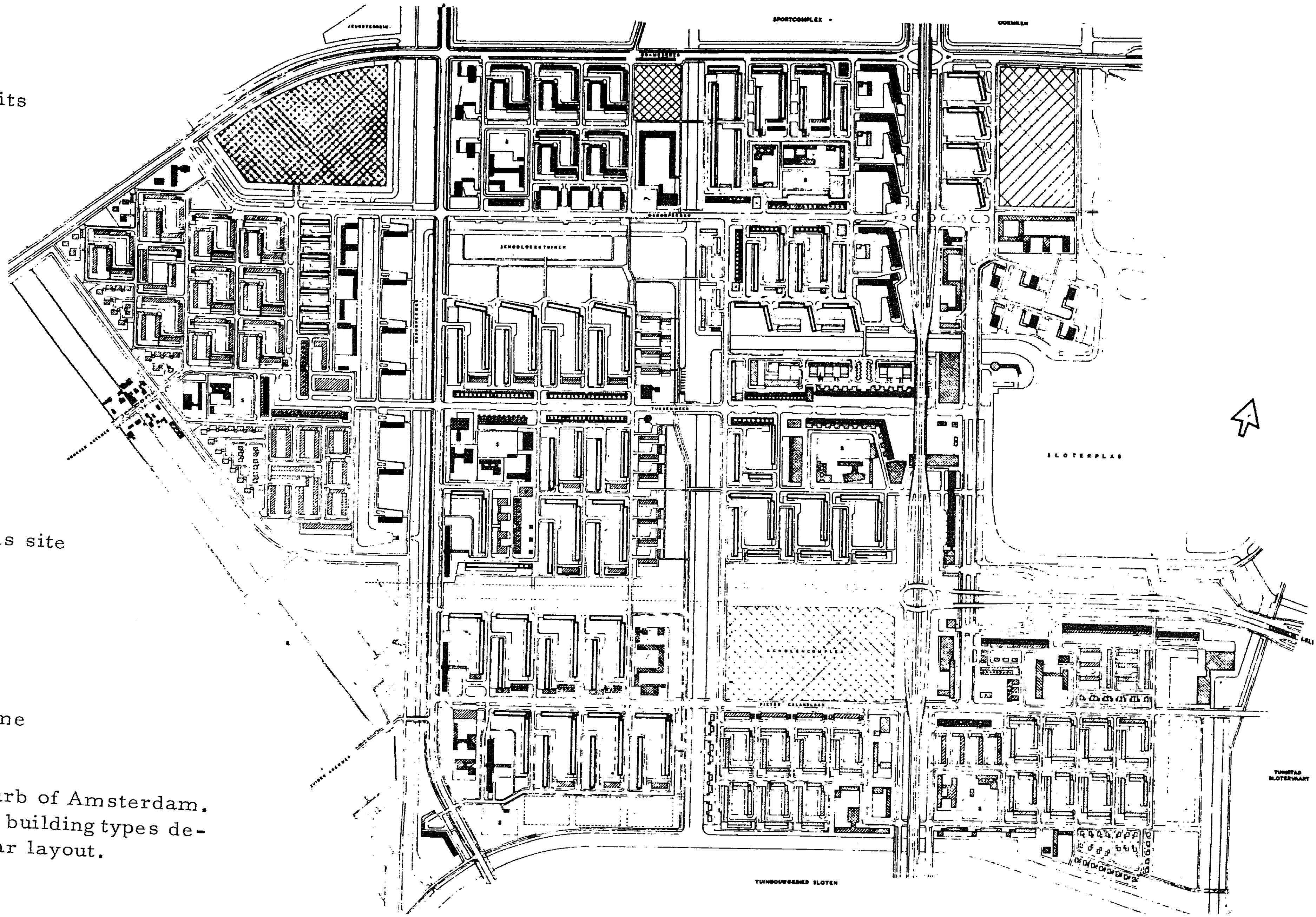
buildings: over 100
3-12 stories

spacing: 60 feet

parking: minimum
balconies: one per unit
recreation: regional area adjoins site
non-residential: schools
shops
etc.
distance: 3.5 miles

sponsor: public and private
occupants: low and middle income
built: started in 1958

Western garden suburb of Amsterdam. Sub-areas of similar building types developed in rectangular layout.



500 0 500 1000 1500 FEET

SLOTERMEER

690 gross acres
615 net acres
10,000 dwelling units
35,000 persons

density: 16 d.u./n.a.
57 per./n.a.

coverage: 25%

f.a.r.: 0.5

buildings: over 100
1-12 stories

spacing: 60 feet

parking: minimum
balconies: one per unit
recreation: regional area adjoins site
on-residential: schools
shops
etc.
distance: 3.5 miles

sponsor: public and private
architects: Bot, Peters, Warners, and others
occupants: low and middle income
built: started in 1952

Similar to other garden suburbs on western edge of Amsterdam.

THE NETHERLANDS: AMSTERDAM **SLOTERVAART**

470 gross acres
380 net acres
5500 dwelling units
20,000 persons

density: 15 d.u./n.a.
51 per./n.a.

coverage: 25%

f.a.r.: 0.7

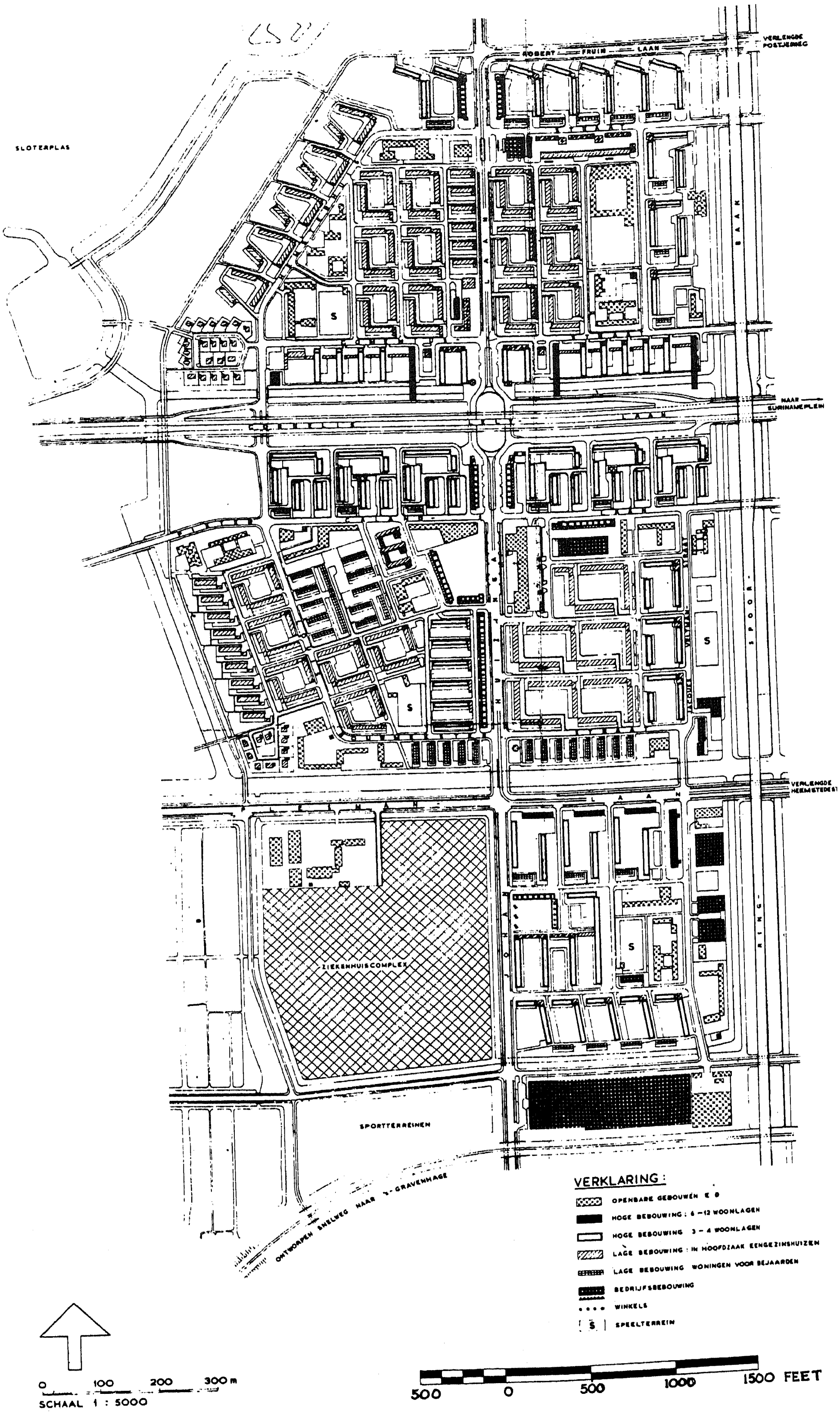
buildings: over 100
1-12 stories

spacing: 55 feet

parking: minimum
balconies: one per unit
recreation: regional area adjoins site
non-residential: schools
shops
etc.
distance: 3.5 miles

sponsor: public and private
architects: Berghoef and others
occupants: low and middle income
built: started in 1955

Garden suburb west of Amsterdam. Major roads and canals split area into small neighborhood.



SLOTERPLAS
ROBERT FRUIN LAAN
VERLENGDE POSTJESWEG
NAAR SURINAMEPLEIN
VERLENGDE HEEMSTEDEST
ZIEKENHUISCOMPLEX
SPORTTERREINEN
ONTWORPEN SNELWEG NAAR 'S-GRAVENHAGE
RING- SPOOR- BAAN
VERKLARING:
OPENBARE GEBOUWEN E O
HOGE BEBOUWING: 6 – 12 WOONLAGEN
HOGE BEBOUWING 3 – 4 WOONLAGEN
LAGE BEBOUWING: IN HOOFDZAAK EENGEZINSHUIZEN
LAGE BEBOUWING WONINGEN VOOR BEJAARDEN
BEDRIJFSBEBOUWING
WINKELS
SPEELTERREIN
0 100 200 300 m
SCHAAL 1 : 5000
500 0 500 1000 1500 FEET

THE NETHERLANDS: ROTTERDAM

LIJNBAAN

10 net acres
600 dwelling units

density: 60 d.u./n.a.

coverage: 25%

f.a.r.: 2.3

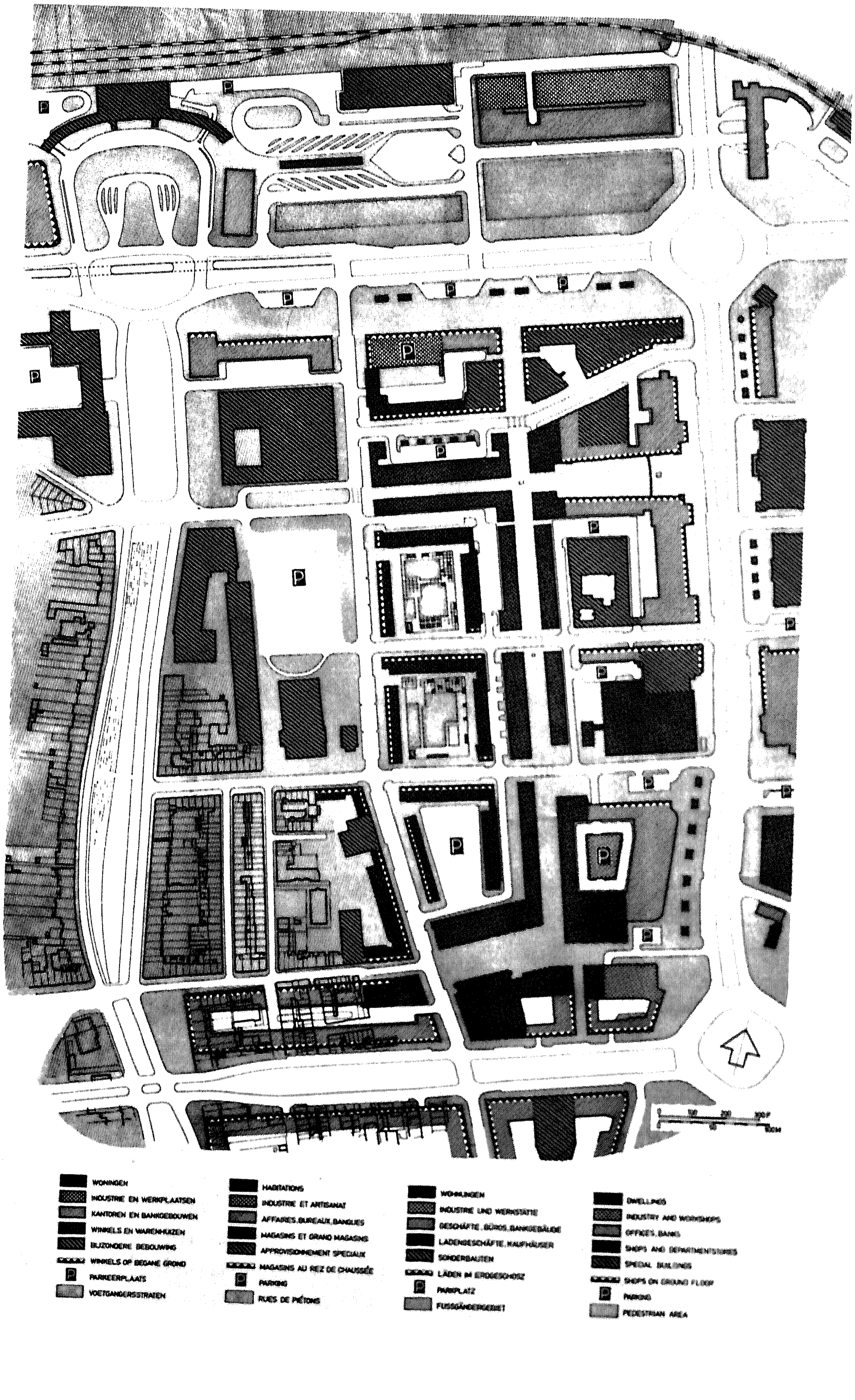
buildings: 9
3-13 stories
100,000 sq. ft. covered

spacing: 150 feet

parking: minimum
balconies: one per unit
recreation: passive areas
non-residential: shops and offices on lower floors
distance: located in central area

architect: Maaskant
occupants: high income
built: 1957

Part of central city reconstruction. Housing complex adjoins the famous Lijnbaan shopping precinct.


WONINGEN
INDUSTRIE EN WERKPLAATSEN
KANTOREN EN BANKGEBOUWEN
WINKELS EN WARENHUIZEN
BIJZONDERE BEBOUWING
WINKELS OP BEGANE GROND
PARKEERPLAATS
VOETGANGERSSTRATEN
HABITATIONS
INDUSTRIE ET ARTISANAT
AFFAIRES, BUREAUX, BANQUES
MAGASINS ET GRAND MAGASINS
APPROVISIONNEMENT SPECIAUX
MAGASINS AU REZ DE CHAUSSÉE
PARKING
RUES DE PIÉTONS
WOHNUNGEN
INDUSTRIE UND WERKSTÄTTE
GESCHÄFTE, BÜROS, BANKGEBÄUDE
LADENGESCHÄFTE, KAUFHÄUSER
SONDERBAUTEN
LÄDEN IM ERDGESCHOSZ
PARKPLATZ
FUSSGÄNGERGEBIET
DWELLINGS
INDUSTRY AND WORKSHOPS
OFFICES, BANKS
SHOPS AND DEPARTMENTSTORES
SPECIAL BUILDINGS
SHOPS ON GROUND FLOOR
PARKING
PEDESTRIAN AREA

LOMBARDIJEN

360 net acres
6100 dwelling units
25,000 persons

density: 17 d.u./n.a.
67 per./n.a.

coverage: 25%

f.a.r.: 1.0

buildings: over 100
94% 1-4 stories
6% over 4 stories

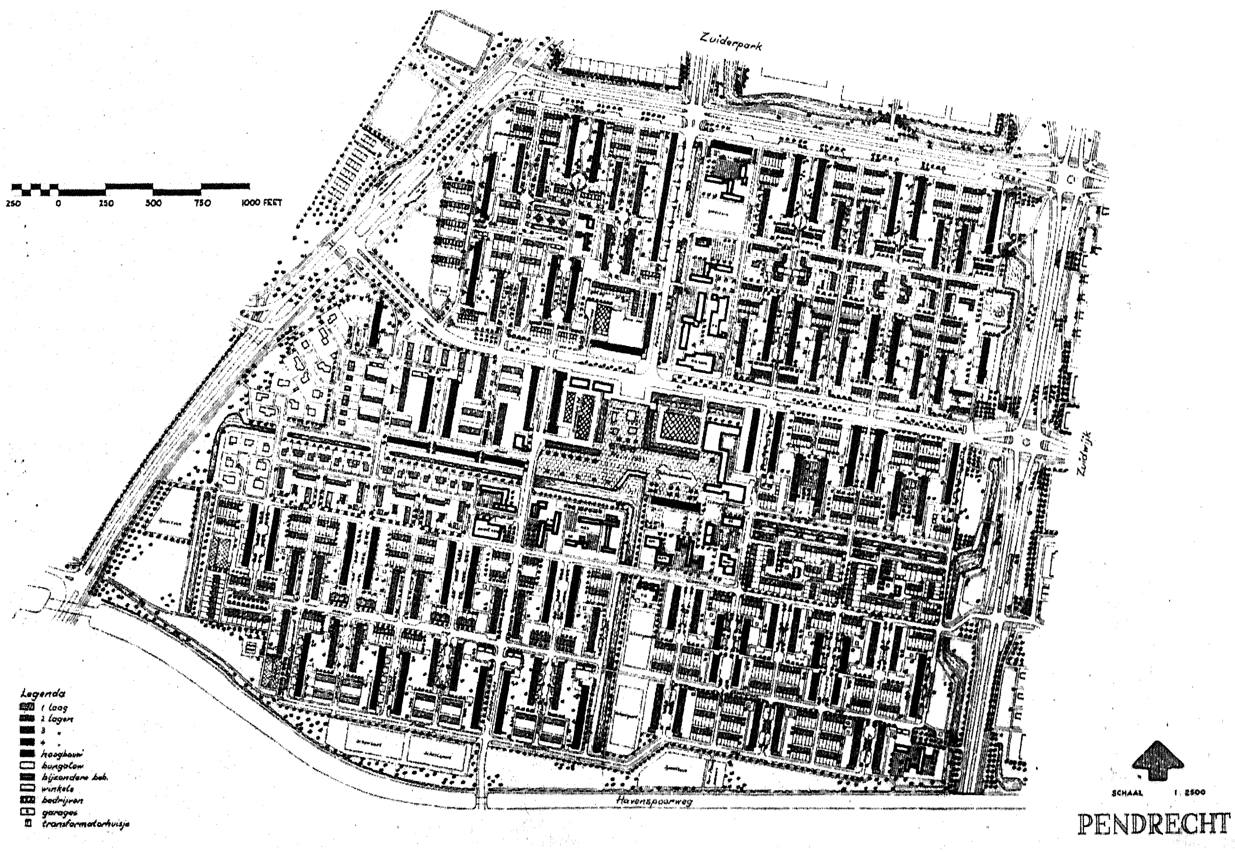
spacing: 55 feet

parking: minimum
recreation: complete range of facilities
regional area near site
non-residential: shops
schools
churches
etc.
distance: 3.5 miles

sponsor: public and private
built: under construction

Adjoins Pendrecht and Zuidwijk on the east and will be similar to those communities in many respects.

THE NETHERLANDS: ROTTERDAM **PENDRECHT**



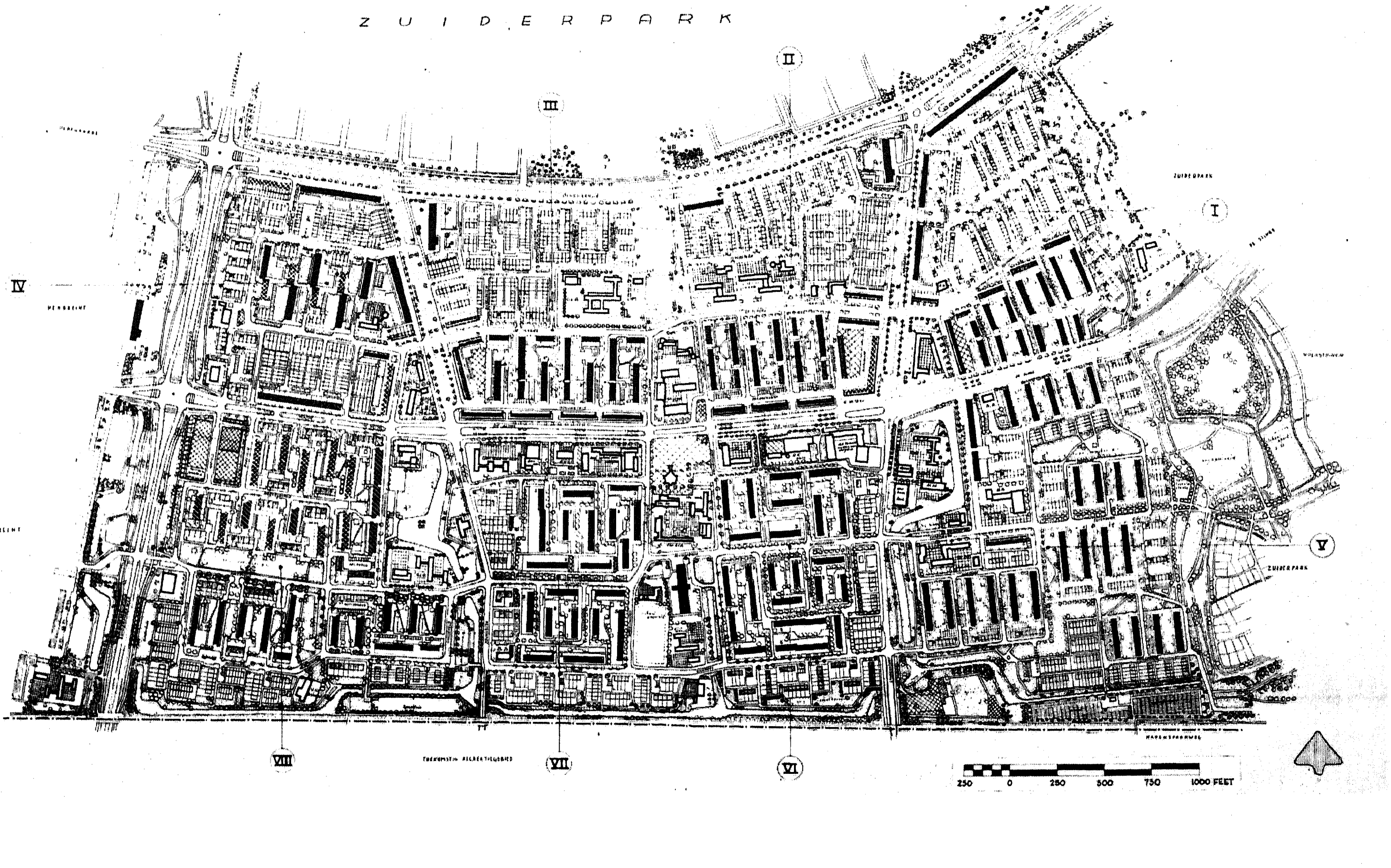
	250 net acres 6300 dwelling units 22,000 persons
density:	25 d.u./n.a. 88 per./n.a.
coverage:	25%
f.a.r.:	0.7
buildings:	over 100 24% 1 story 68% 2 and 3 stories 8% 4 stories and over
spacing:	55 feet
parking:	minimum
balconies:	one per unit
recreation:	complete range of facilities regional area near site
non-residential:	schools shops churches etc.
distance:	3.5 miles
sponsor:	public and private
architects:	Lucas, Bakker, Nefkens, Kuyfer, and others
occupants:	mostly workers
built:	started in 1955

A complete self-contained community excluding places of employment.

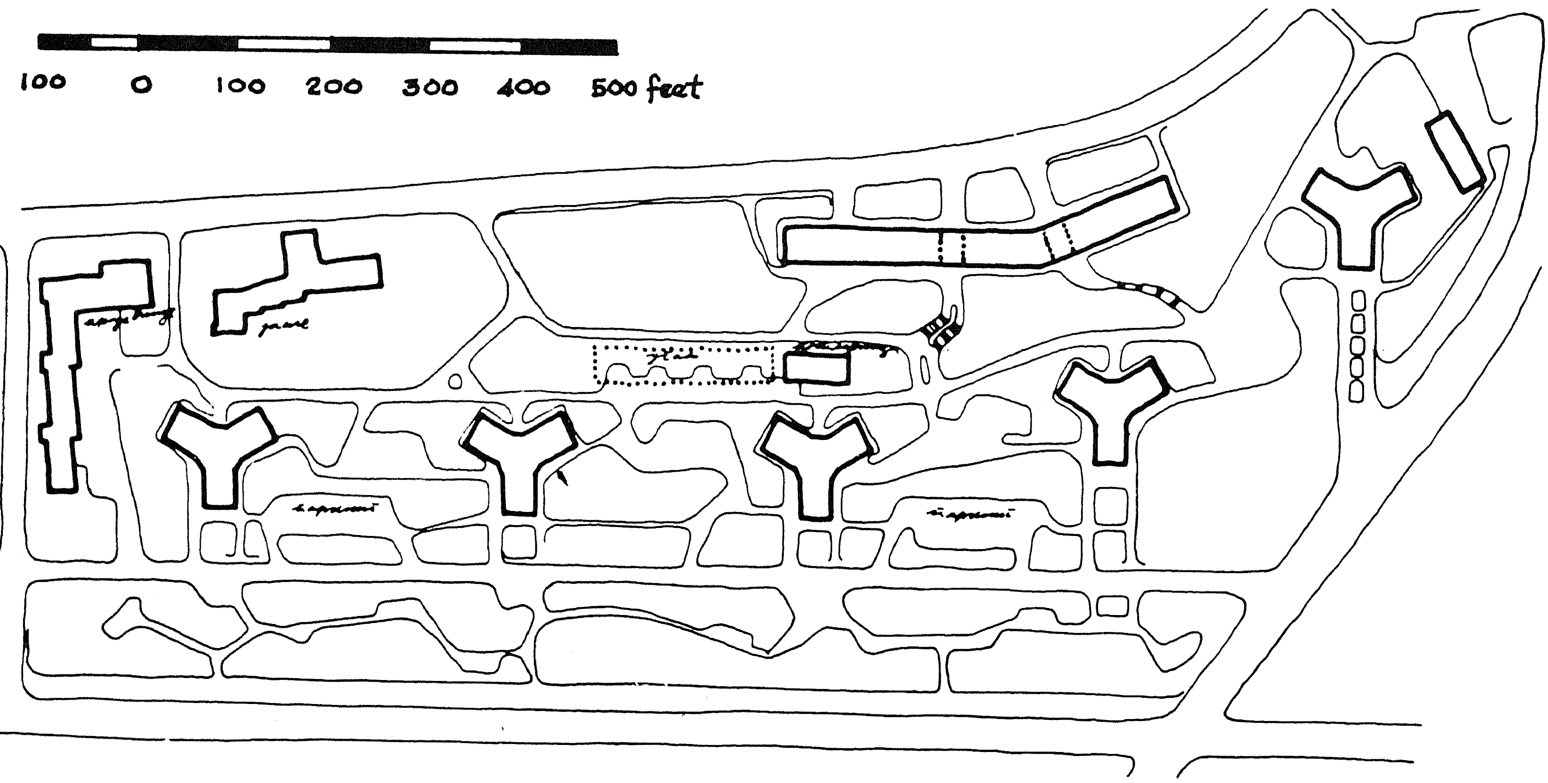
	290 net acres 7000 dwelling units 28,000 persons
density:	24 d.u./n.a. 96 per./n.a.
coverage:	33%
f.a.r.:	0.8
buildings:	over 100 2-11 stories
spacing:	50 feet
parking:	minimum
balconies:	one per unit
recreation:	complete range of facilities regional area near site
non-residential:	schools shops churches etc.
distance:	3.5 miles
sponsor:	public and private
architects:	Van Tijen: Maaskant, Grodsunn, and others
occupants:	mostly workers
built:	started c.1953

One of a string of major new settlements on the southern edge of Rotterdam. Lies between Pendrecht and Lombardijen.

THE NETHERLANDS: ROTTERDAM **ZUIDWIJK**



HYDE PARK



20.5 gross acres
11.5 net acres
455 dwelling units
1200 persons

density: 40 d.u./n.a.
105 per./n.a.

coverage: 5%

f.a.r.: 0.75

buildings: 5
15 stories
25,000 sq. ft. covered

spacing: 200 feet

parkin
balconie
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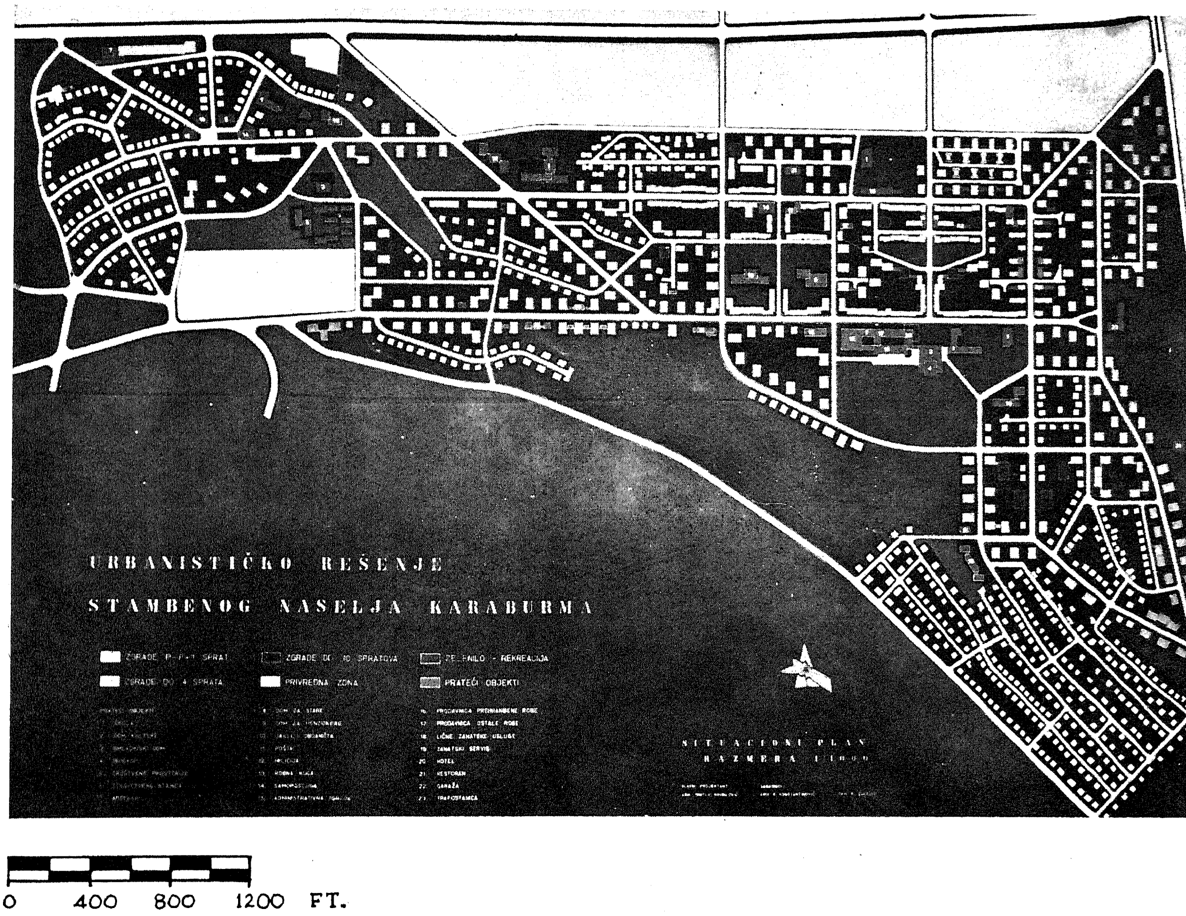
YUGOSLAVIA: BELGRADE

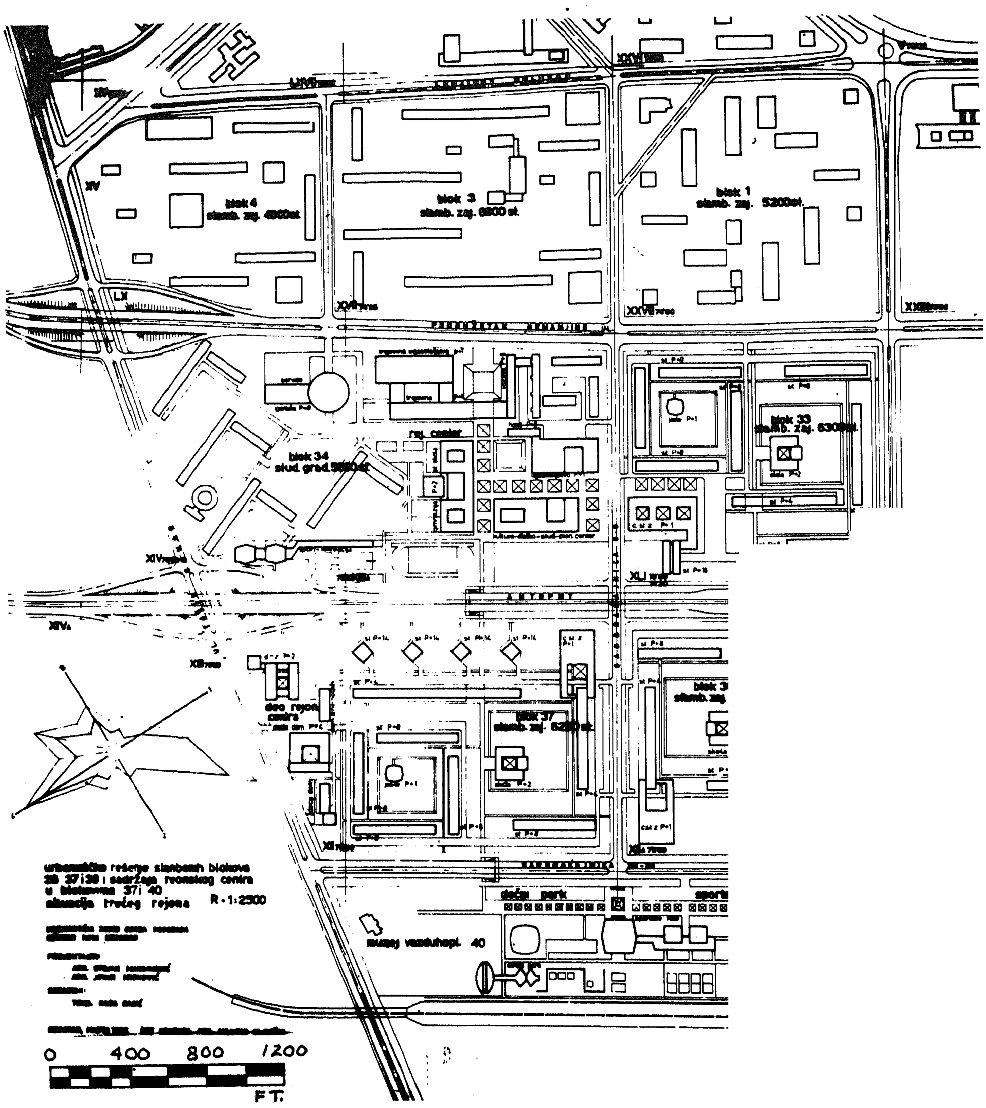
	370 gross acres
	250 net acres
	6000 dwelling units
	22, 500 persons
density:	24 d.u./n.a.
	90 per./n.a.
buildings:	over 100
	1-9 stories
parking:	scattered lots
balconies:	one per unit
recreation:	full range of facilities
non-residential:	schools
	shops
	cultural center
	civic center
	health facilities
	etc.
distance:	2.5 miles
sponsor:	public
architects:	Gavrilovic and Ronstantinovic
occupants:	mixed income
built:	started in 1947

Three complete neighborhoods grouped together to form a self-contained community. Site along Danube River.


URBANISTIČKO REŠENJE
STAMBENOG NASELJA KARABURMA
ZGRADE DO 10 SPRATOVA
ZELENILO - REKREACIJA
ZGRADE DO 4 SPRATA
PRIVREDNA ZONA
PRATEĆI OBJEKTI
DOM ZA STARE
POŠTA
MILICIJA
ROBNA KUĆA
SAMOPOSLUGA
ADMINISTRATIVNA ZGRADA
PRODAVNICA PREHRAMBENE ROBE
PRODAVNICA OSTALE ROBE
LIČNE ZANATSKE USLUGE
ZANATSKI SERVIS
HOTEL
RESTORAN
GARAŽA
TRAFOSTANICA
SITUACIONI PLAN
0
400
800
1200 FT.


1000 0 2000 4000 FEET

YUGOSLAVIA: BELGRADE

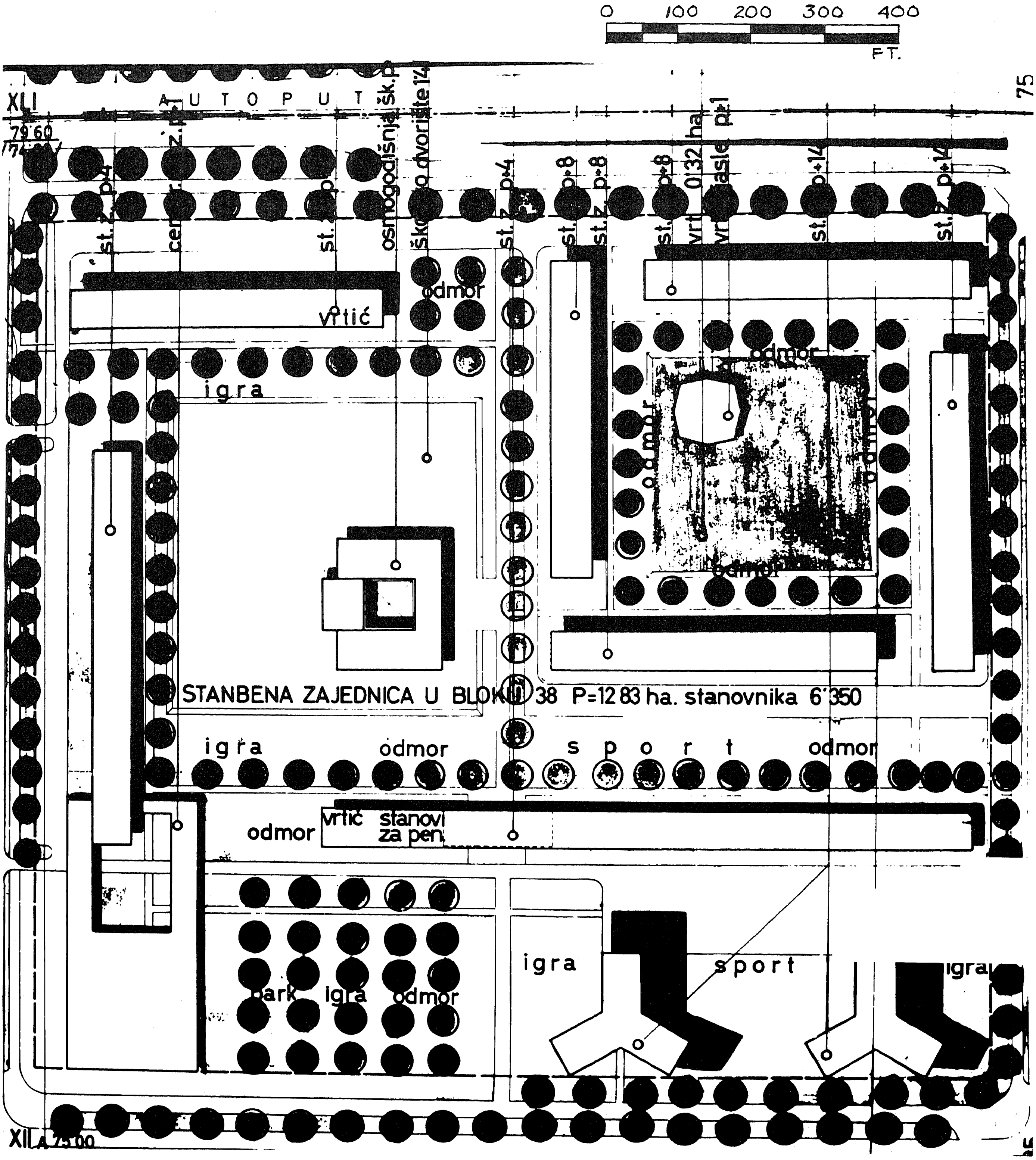


NEW BELGRADE

	42 gross acres
	35 net acres
	1840 dwelling units
	6400 persons
density:	51 d.u./n.a.
	183 per./n.a.
coverage:	12%
f.a.r.:	1.0
buildings:	9
	5, 9, and 15 stories
	185,000 sq. ft. covered
spacing:	75 feet
parking:	482 open spaces
	160 covered spaces
balconies:	one per unit
recreation:	full range of facilities
residential:	schools
	shops
	community center
	health facilities
	etc.
istance:	1.5 miles
ponsor:	public
hitects:	Petricic and others
cupants:	mixed income
built:	started c. 1960

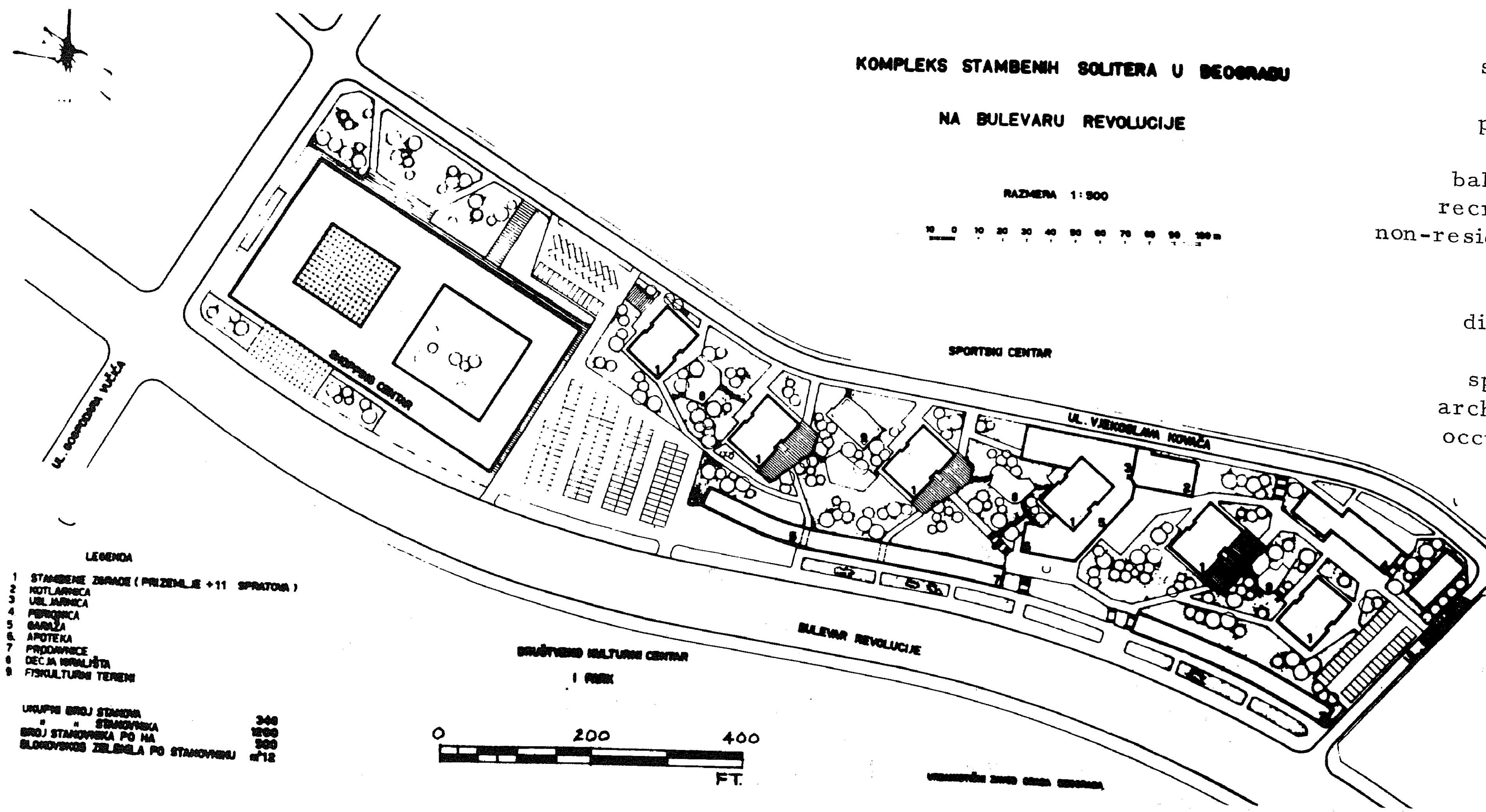
A complete neighborhood unit. One of a great many neighborhoods that make up a new city of 250,000 people across the Sava River from the existing city of Belgrade.

(Figures refer to single neighborhood unit.)


0 100 200 300 400
FT.
XLI
AUTOPUT
75
st. z. p+4
st. z. p
osmogodišnja šk. p
st. z. p+4
st. z. p+8
st. z. p+8
st. z. p+8
vrt. 0.132 ha
vrt. jasle p+1
st. z. p+14
st. z. p+14
odmor
vrtić
igra
odmor
odmor
odmor
odmor
STANBENA ZAJEDNICA U BLOKU 38 P=12.83 ha. stanovnika 6.350
igra
odmor
sport
odmor
odmor
vrtić stanovi za pen.
park igra odmor
igra
sport
igra

YUGOSLAVIA: BELGRADE

REVOLUTION BOULEVARD



14 gross acres
8 net acres
348 dwelling units
1200 persons

density: 44 d.u./n.a.
150 per./n.a.

coverage: 9%

f.a.r.: 1.1

buildings: 6
13 stories
30,000 sq. ft. covered

spacing: 115 feet

parking: 190 spaces in scattered lots
some garages
balconies: one per unit
recreation: play areas around buildings
non-residential: shops
market
laundry
distance: 2.5 miles

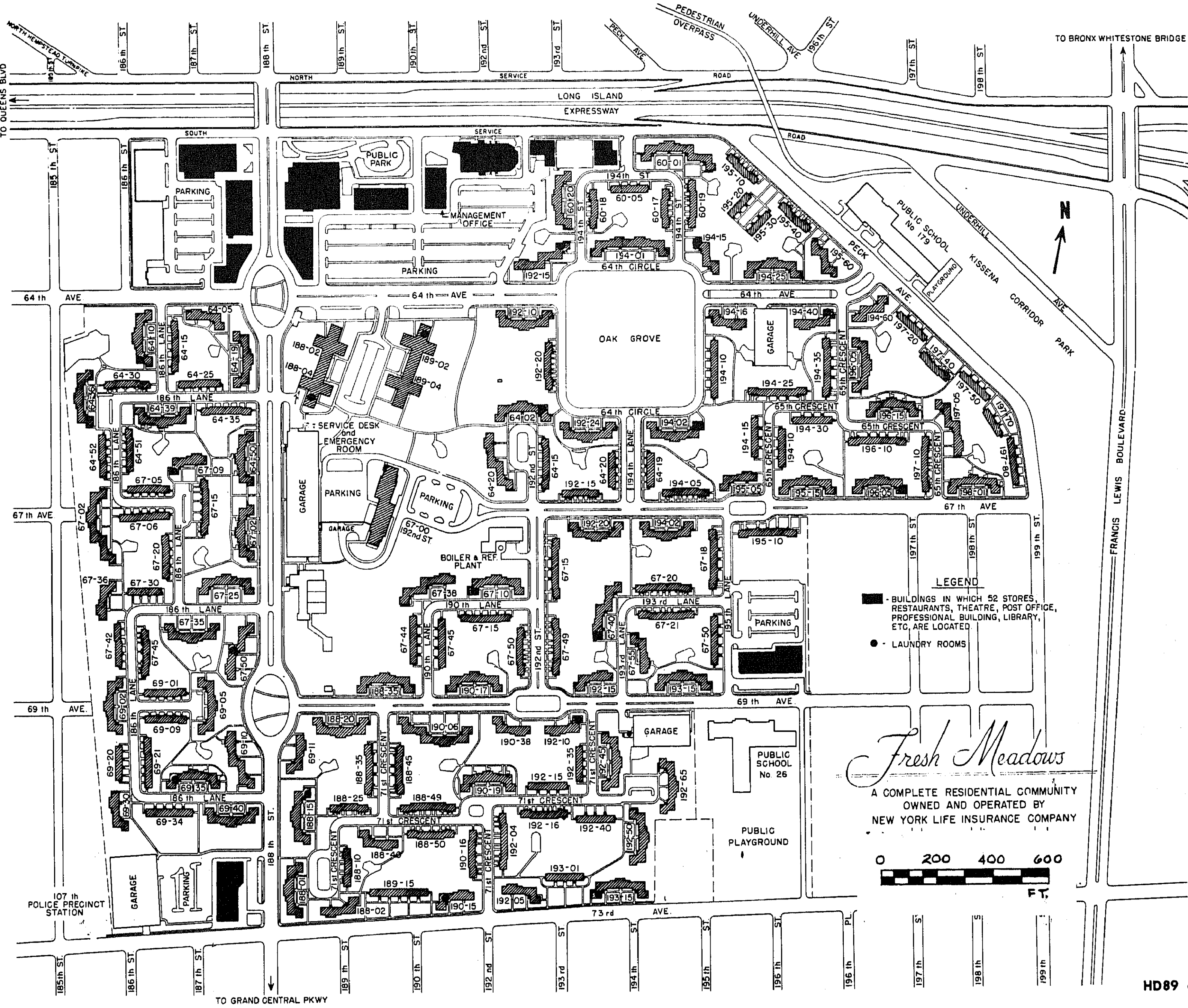
sponsor: public
architects: Antic and Jerotijevic
occupants: mixed income
built: c.1959

Point blocks along a ridge. Protected play areas close to buildings.

	158 gross acres 145 net acres 3300 dwelling units 12, 000 persons
density:	23 d.u./n.a. 83 per./n.a.
coverage:	20%
f.a.r.:	0.8
buildings:	over 100 2, 3, 13, and 21 stories
spacing:	75 feet
parking:	4 large garages scattered small lots
balconies:	none
recreation:	play areas playgrounds
non-residential:	schools shopping center offices etc.
distance:	10 miles
sponsor:	private
architects:	Voorhees, Walker, Foley, Smith, and others
occupants:	middle income
built:	1949 and 1962

Buildings face interior green areas. Variety of dwelling types and open areas.

U.S.A.: NEW YORK **FRESH MEADOW**



HD89

U.S.A.: NEW YORK

HIGHBRIDGE HOUSES

12.5 net acres
700 dwelling units
2800 persons

density: 56 d.u./n.a.
225 per./n.a.

coverage: 8%

f.a.r.: 1.1

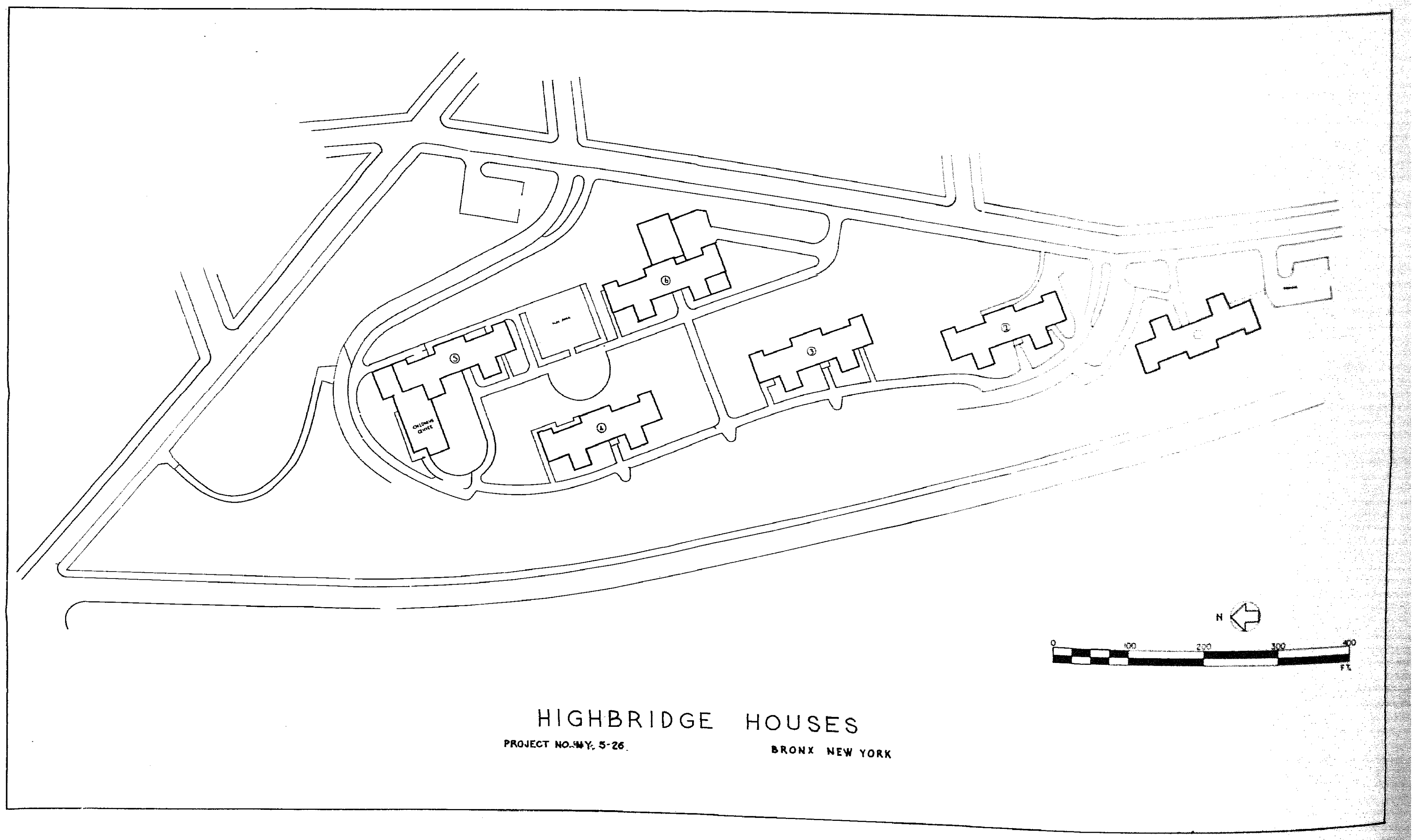
buildings: 6
13 stories
45,000 sq. ft. covered

spacing: 115 feet

parking: 140 spaces in small lots
balconies: none
recreation: play areas
non-residential: none
distance: 6 miles

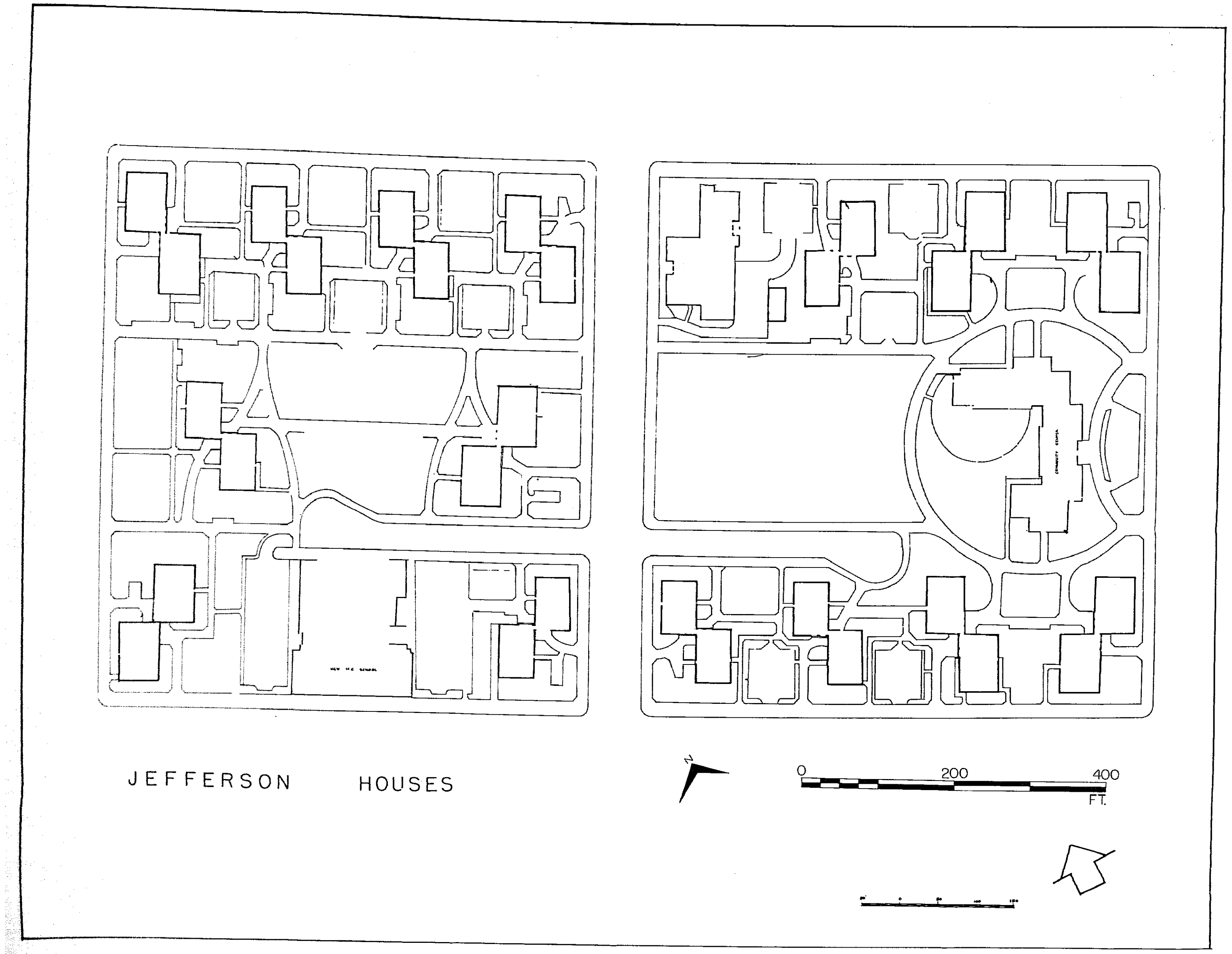
sponsor: PHA
architect: Peterkin
occupants: low income
built: c.1953

Elevated site overlooking the Harlem River. Buildings staggered for views from all apartments.



U.S.A.: NEW YORK

JEFFERSON HOUSES



17.5 net acres
1500 dwelling units
5600 persons

density: 85 d.u./n.a.
320 per./n.a.

coverage: 17%

f.a.r.: 1.8

buildings: 18
7, 13, and 14 stories
130,000 sq. ft. covered

spacing: 80 feet

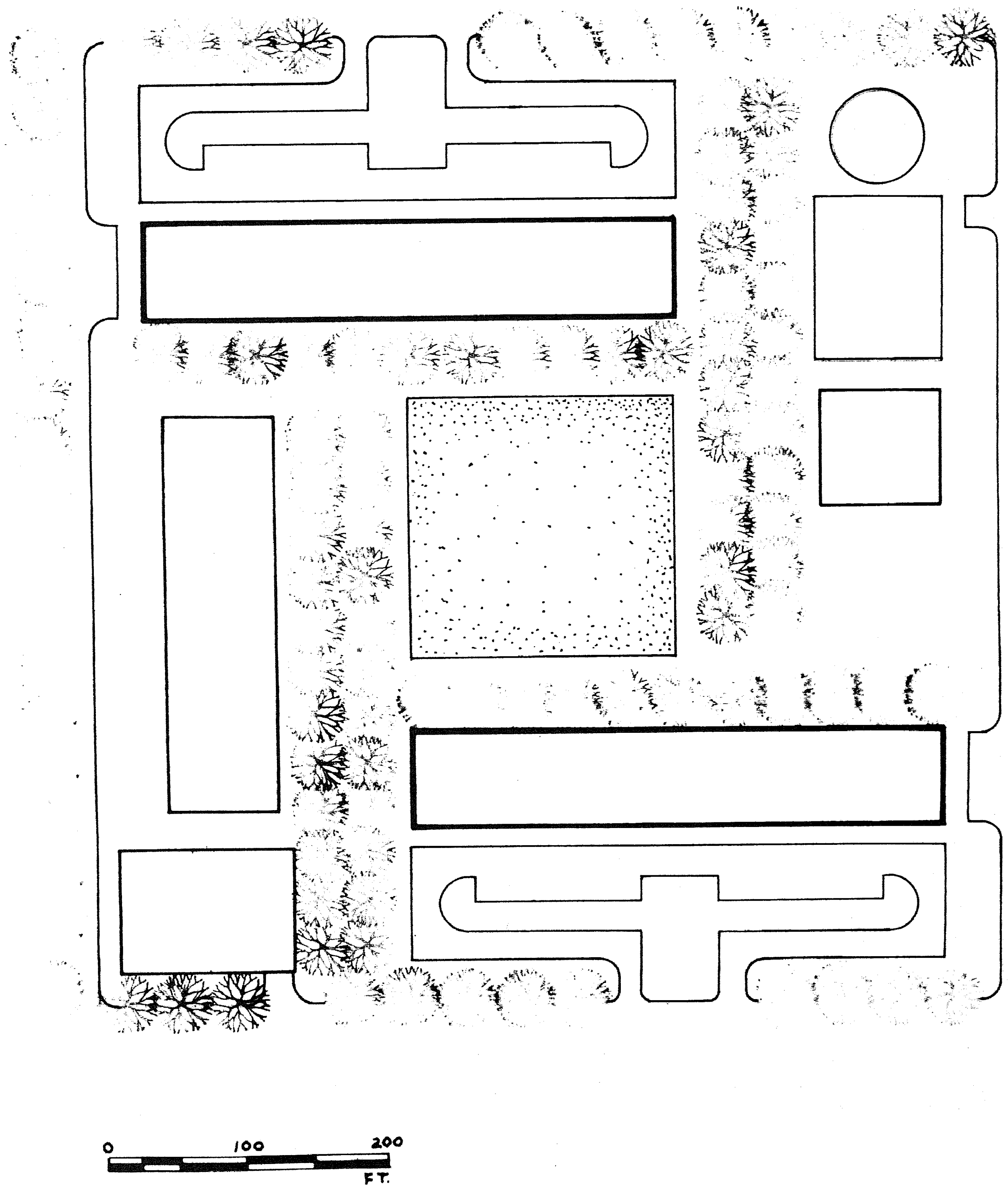
parking: 250 spaces in small lots
balconies: none
recreation: play areas
non-residential: community center
school and church adjoin site
distance: 4 miles

sponsor: PHA
architects: Brown and Guenther
occupants: low income
built: c. 1952

Variety of open spaces for passive and active recreation.

U.S.A.: NEW YORK

KIPS BAY PLAZA



9.5 gross acres
9 net acres
1100 dwelling units

density: 122 d.u./n.a.

coverage: 14%

f.a.r.: 2.8

buildings: 2
20 stories
55,000 sq. ft. covered

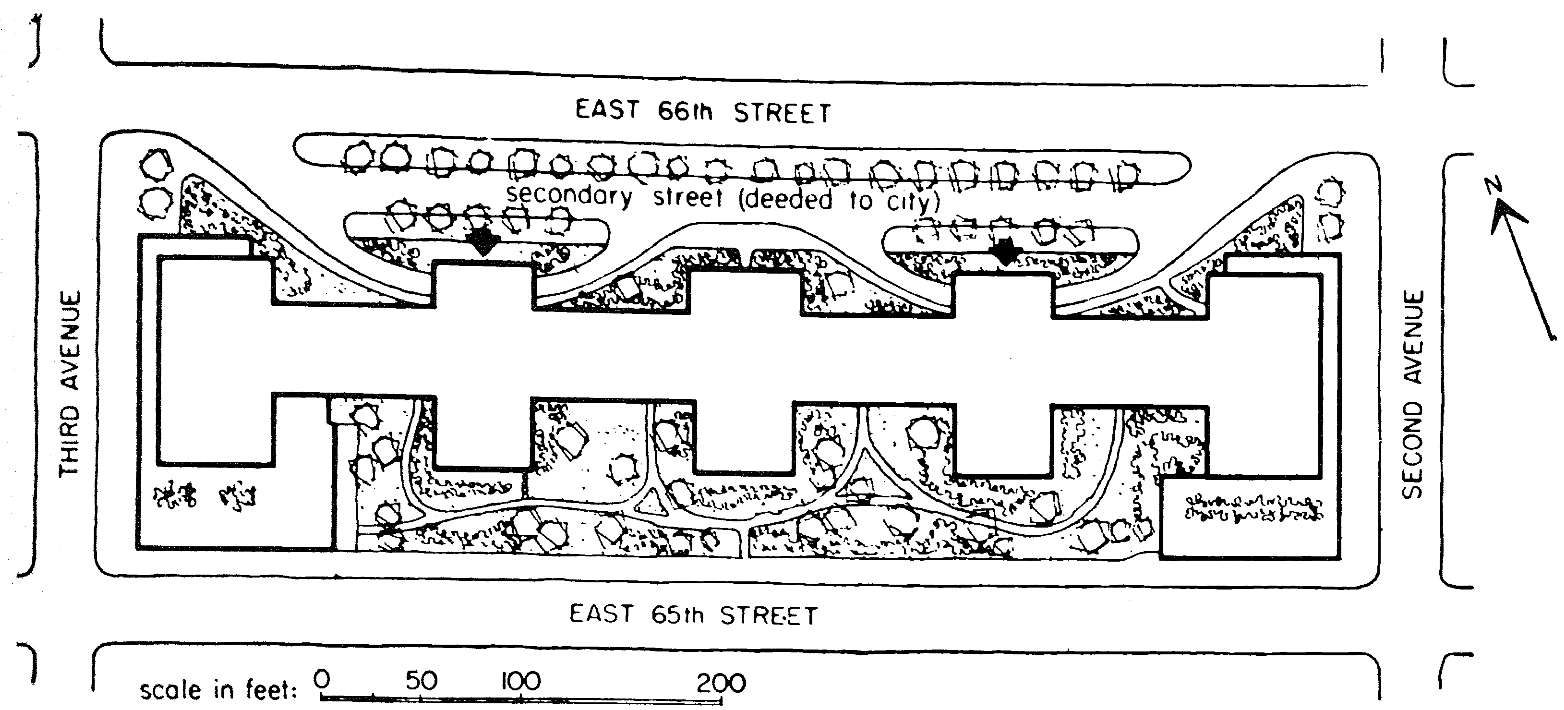
spacing: 300 feet

parking: about 400 spaces mostly in underground garages
balconies: none
recreation: play areas
non-residential: shopping center
theatre
medical-professional building
distance: located in city center

sponsor: URA, FHA
architects: Pei and others
occupants: high income
built: 1962

Buildings enclose park area and protect pedestrians from heavy traffic around site.

U.S.A.: NEW YORK **MANHATTAN HOUSE**



3.5 net acres
581 dwelling units

density: 166 d.u./n.a.

coverage: 35%

f.a.r.: 7.0

building: 20 stories
53,000 sq. ft. covered

parking: garage for 225 cars
balconies: about 1/2 of the apartments
recreation: small garden play area
non-residential: ground floor shops
distance: located in city center

sponsor: private
architects: Mayer and Whittlesey, and Skidmore, Ownings, and Merrill
occupants: high income
built: 1951

Building walls enclose ground space. Wall along site's edge protects play area from street traffic.

U.S.A.: NEW YORK **PARK WEST**

21 gross acres
17.5 net acres
2495 dwelling units

density: 142 d.u./n.a.

coverage: 17%

f.a.r.: 3.0

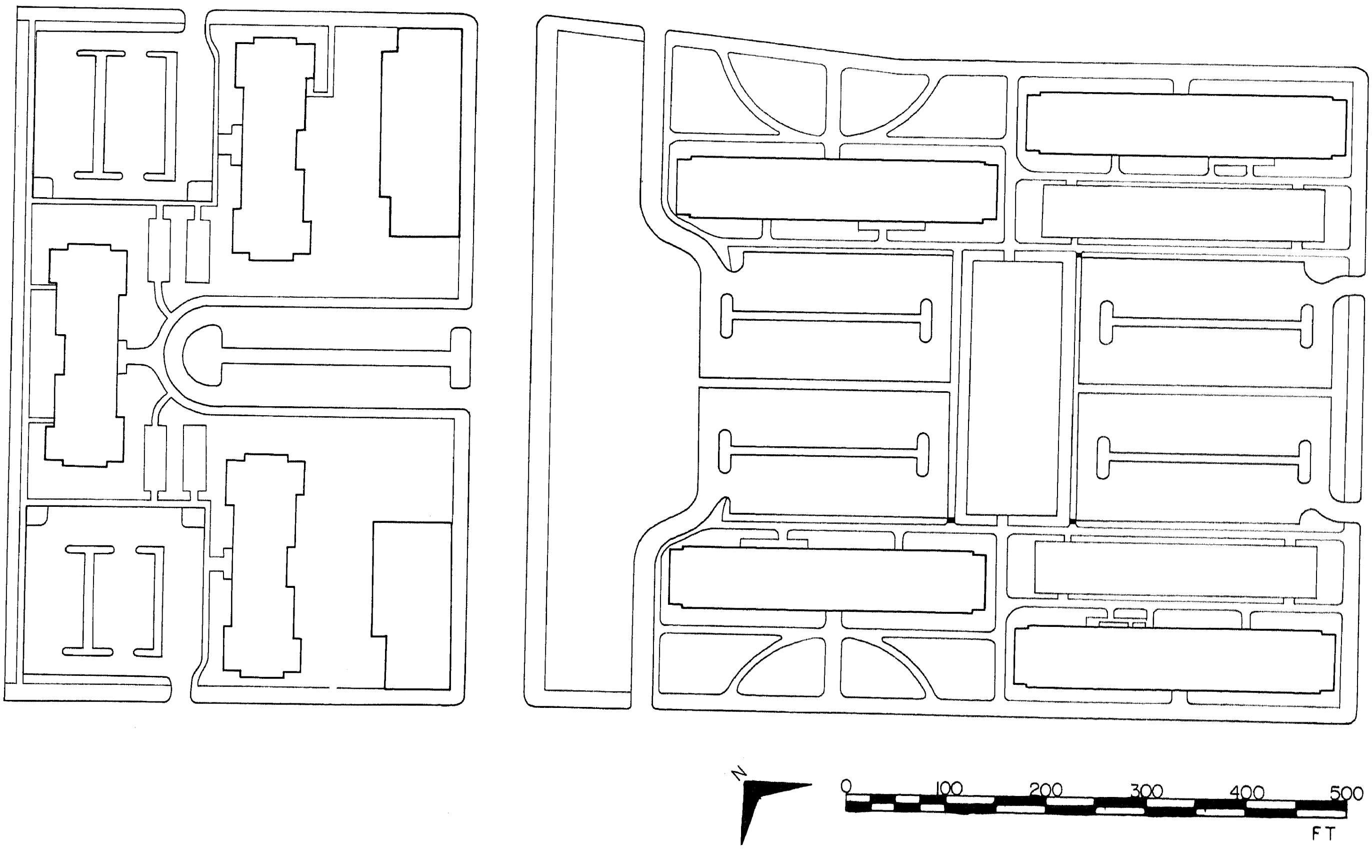
buildings: 7
16 and 19 stories
130,000 sq. ft. covered

spacing: 330 feet

parking: about 1200 spaces
balconies: one per unit
recreation: play areas
non-residential: shops
school adjoins site
distance: 3 miles

sponsor: URA, FHA
architect: Kessler
occupants: middle and high income
built: c.1959

Site adjoins Central Park. Buildings spread on site to open views to park space.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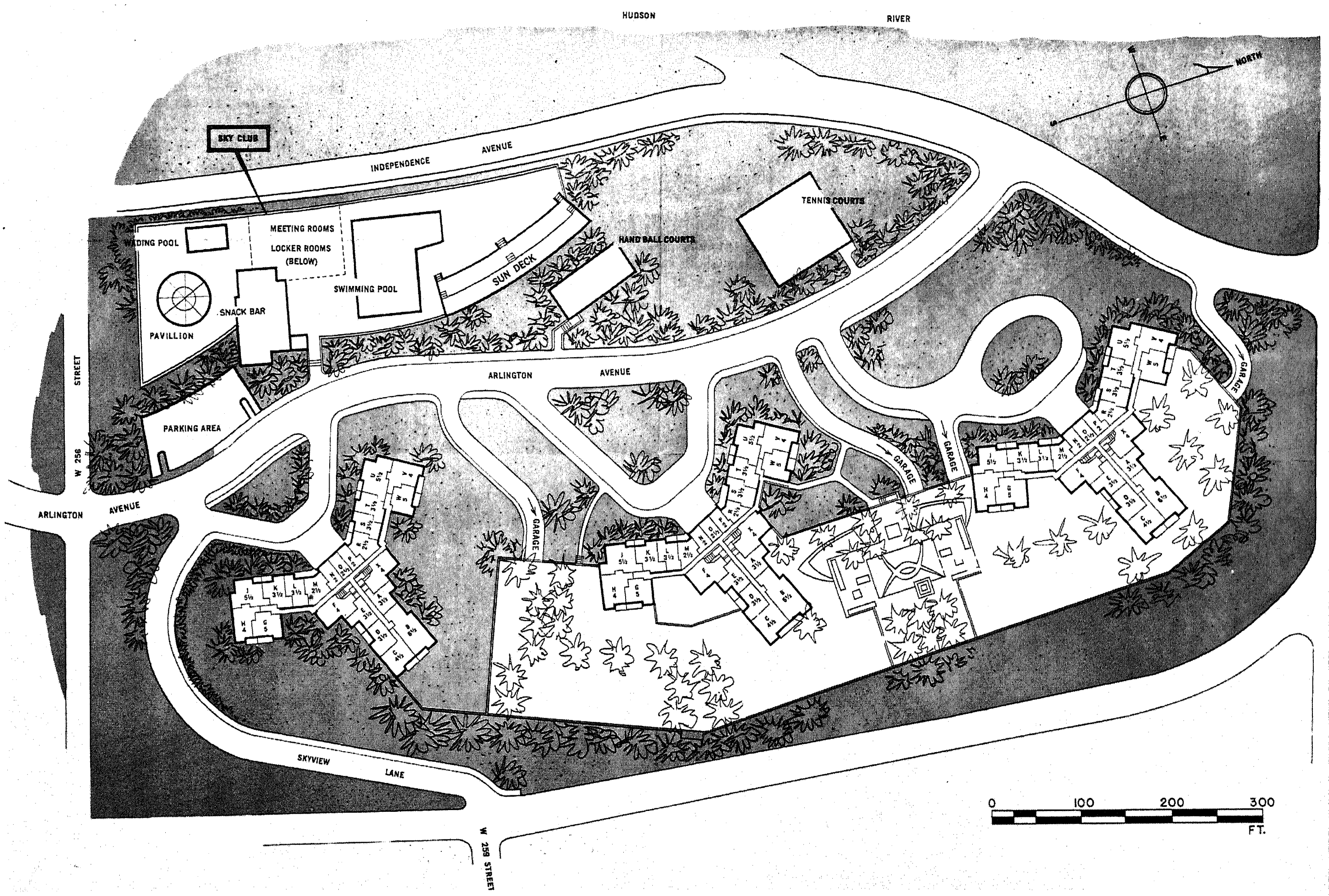
HUDSON
RIVER
NORTH
INDEPENDENCE AVENUE
SKY CLUB
WADING POOL
MEETING ROOMS
LOCKER ROOMS
(BELOW)
SWIMMING POOL
SUN DECK
HAND BALL COURTS
TENNIS COURTS
PAVILLION
SNACK BAR
PARKING AREA
ARLINGTON AVENUE
W 256 STREET
ARLINGTON AVENUE
GARAGE
GARAGE
GARAGE
GARAGE
SKYVIEW LANE
W 259 STREET
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SKYVIEW ON THE HUDSON

INDEPENDENCE PARK

	20 gross acres 14 net acres 1300 dwelling units
density:	93 d.u./n.a.
coverage:	10%
f.a.r.:	2.0
buildings:	3 20 stories 63,000 sq. ft. covered
spacing:	200 feet
parking:	large garage
balconies:	about 2/3 of the units
recreation:	swimming pool tennis courts play areas
non-residential:	community building
distance:	12 miles
sponsor:	FHA
architect:	Birnbaum
occupants:	middle and high income
built:	c. 1961

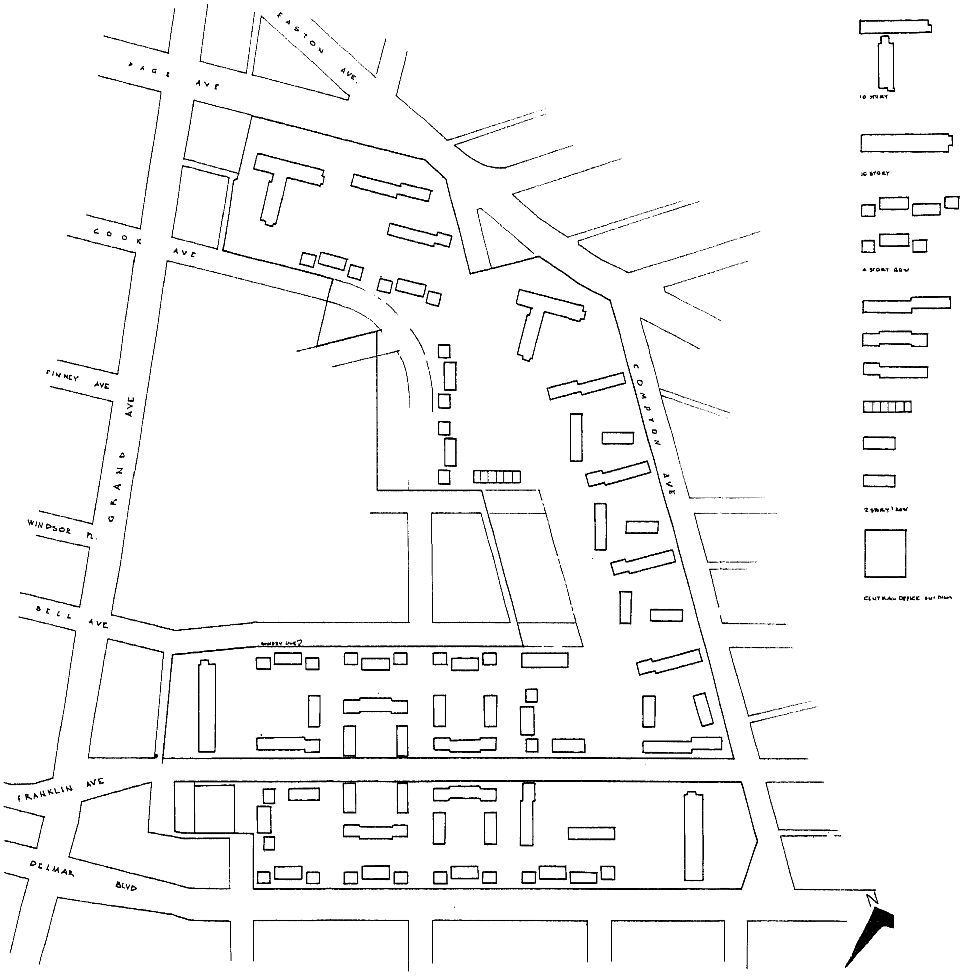
Most apartments overlook the Hudson River. Garage roof developed for open space uses.

U.

	27 net acres
	888 dwelling units
	3800 persons
density:	33 d.u./n.a.
	140 per./n.a.
coverage:	19%
f.a.r.:	0.7
buildings:	52
	2, 4, and 10 stories
	225,000 sq. ft. covered
spacing:	30 feet
parking:	666 spaces
balconies:	only on 2-story buildings
recreation:	tot lots
	play areas
non-residential:	laundries
	school adjoins site
distance:	1.8 miles
sponsor:	PHA
architects:	Murphy and Mackey
occupants:	low income
built:	in planning stage

Variety of dwelling units - some with private outdoor areas, others for elderly occupants. Site details include artificial hills.

BLUMEYER APARTMENTS

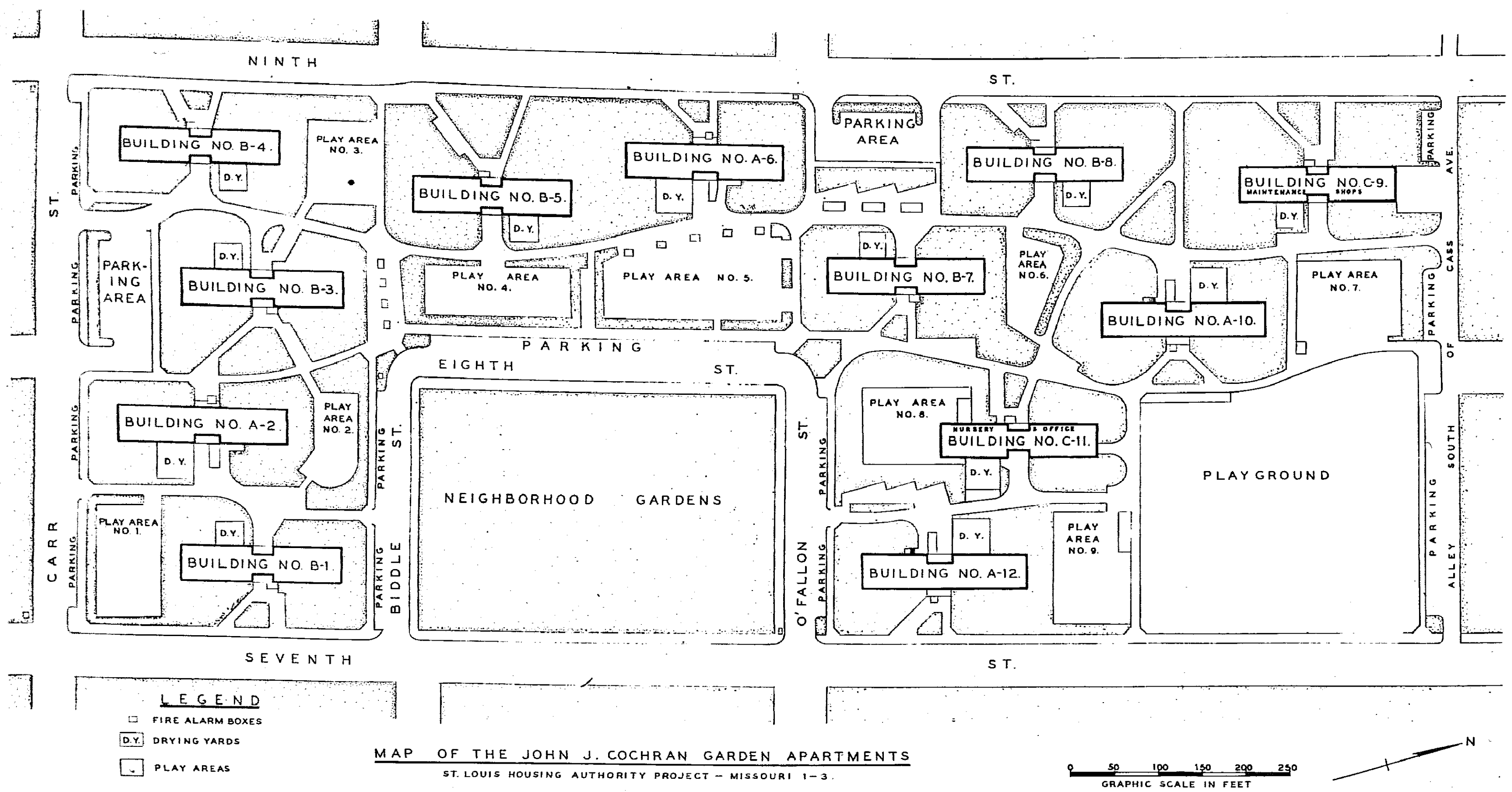


ARTHUR A. BLUMEYER APARTMENTS

0 200 600

U.S.A.: ST. LOUIS AND ENVIRONS

COCHRAN APARTMENTS



21.2 gross acres
18 net acres
704 dwelling units
2900 persons

density: 39 d.u./n.a.
160 per./n.a.

coverage: 10%

f.a.r.: 0.8

buildings: 12
6, 7, and 13 stories
80,000 sq. ft. covered

spacing: 110 feet

parking: scattered small lots
balconies: one per unit
recreation: play areas
playground adjoins site
non-residential: nursery
distance: 1 mile

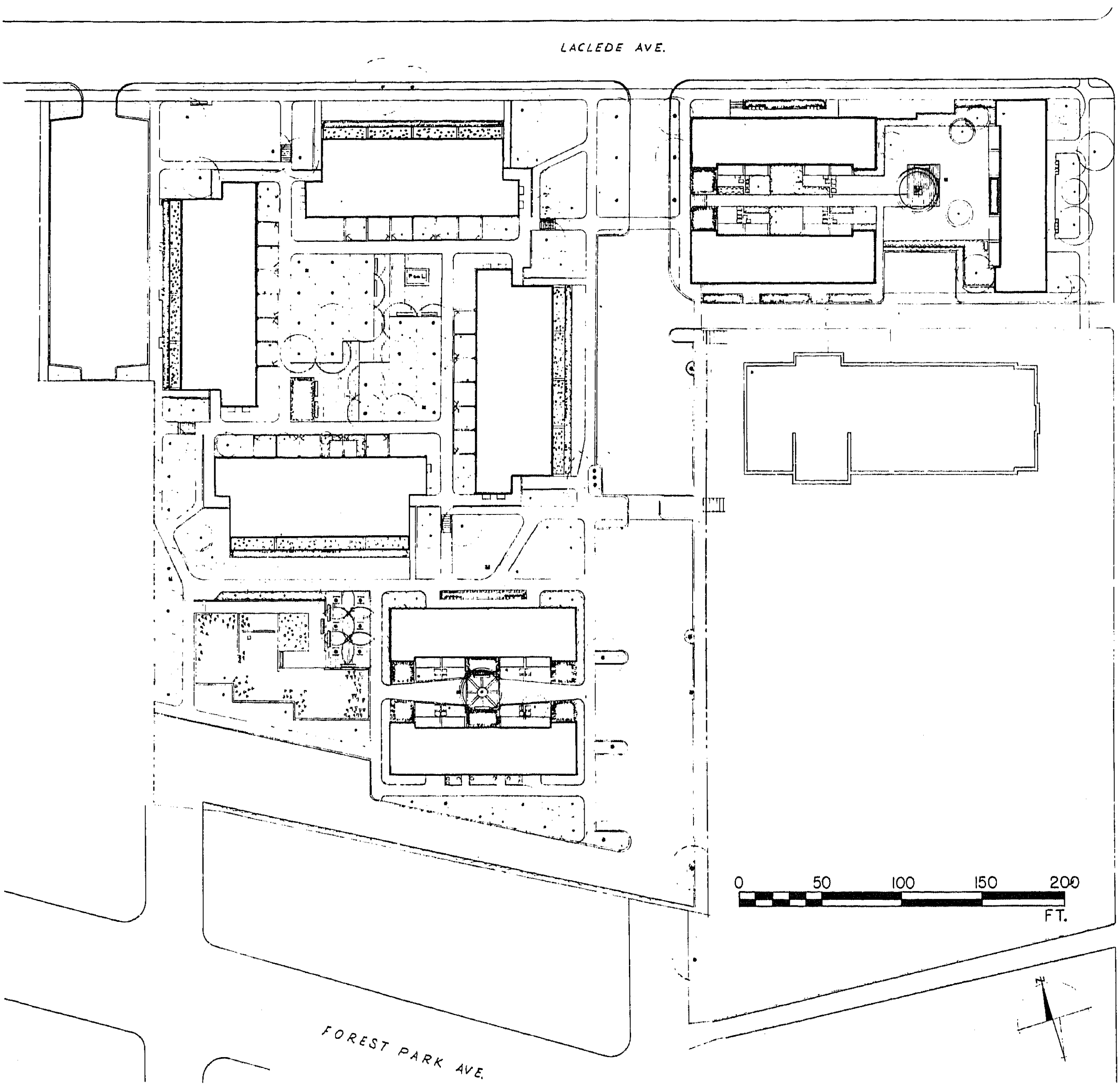
sponsor: PHA
architects: Hellmuth and Associates
occupants: low income
built: 1953

Protected play areas and drying yards located close to all buildings. Automobiles restricted to site periphery.

U.S.A.: ST. LOUIS AND ENVIRONS

LACLEDE PARK

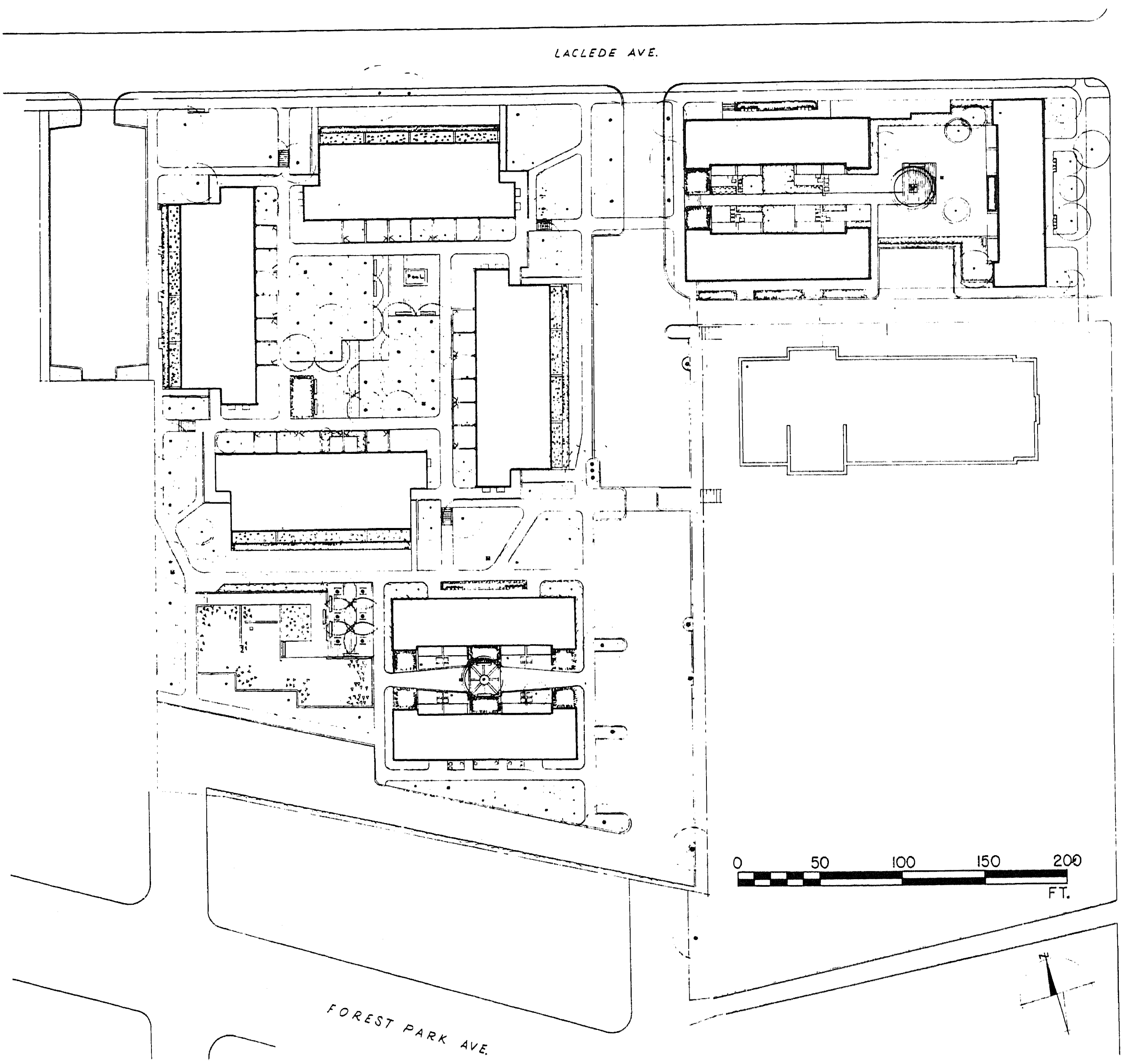
MILL CREEK



U.S.A.: ST. LOUIS AND ENVIRONS

LACLEDE PARK

MILL CREEK



5 net acres
120 dwelling units

density: 24 d.u./n.a.

coverage: 18%

f.a.r.: 0.36

buildings: 9
2 stories
40,000 sq. ft. covered

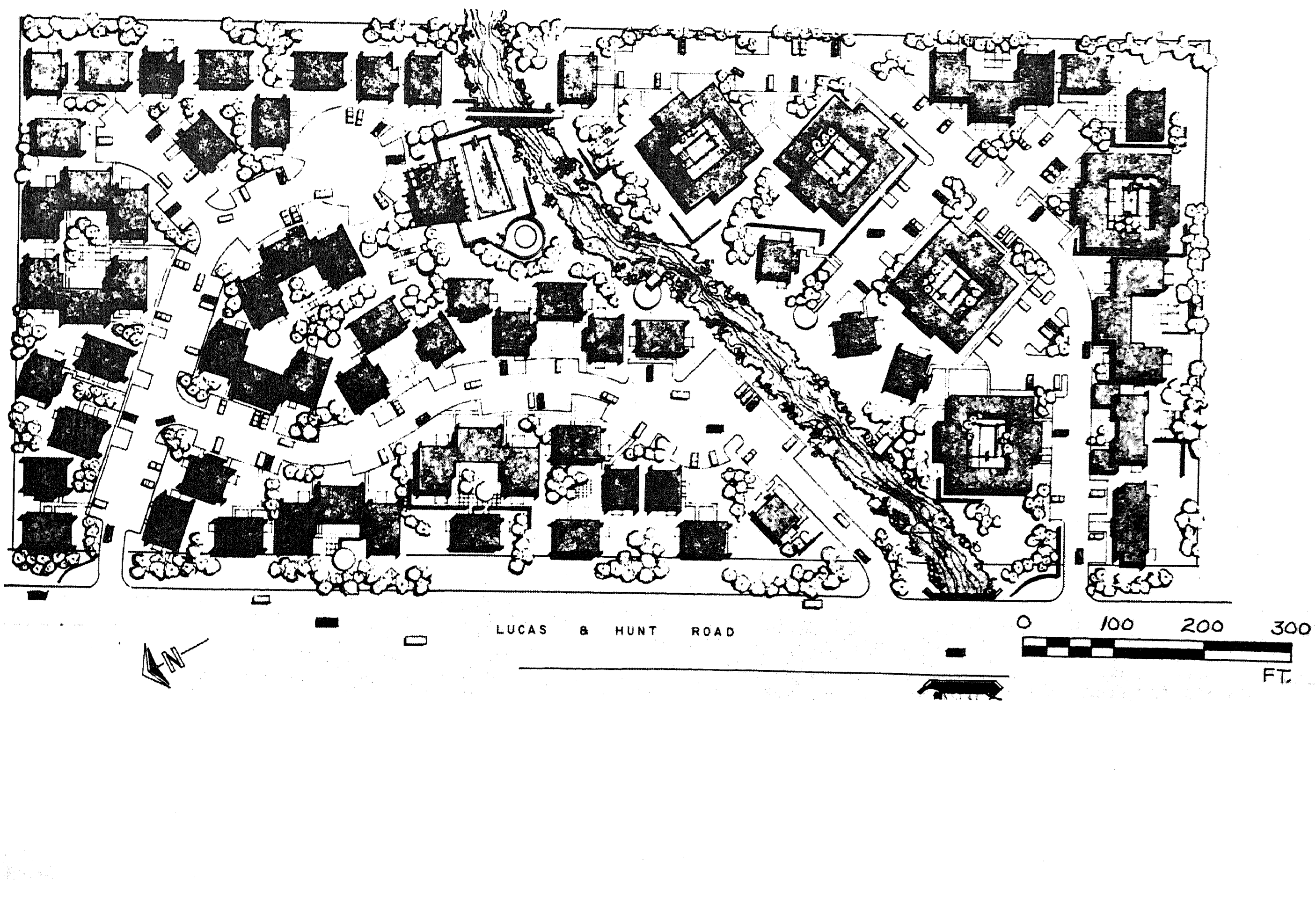
spacing: 40 feet

parking: 120 spaces
balconies: one per unit
recreation: tot lots
non-residential: school adjoins site
distance: 1.5 miles

sponsor: URA
architects: Mayer, Whittlesey, and Glass
occupants: middle and high income
built: 1962

Private outdoor areas open on communal walks and tot lots. First project in a vast redevelopment area.

U.S.A.: ST. LO



PARK TOWNE

19 gross acres
18.5 net acres
383 dwelling units

density: 21 d.u./n.a.

coverage: 17%

f.a.r.: 0.34

buildings: 54
2 stories
135,000 sq. ft. covered

spacing: 15 feet

parking: scattered small lots
balconies: 2nd floor apartments
recreation: tot lots
swimming pools
non-residential: community building
distance: 7.5 miles

sponsor: private
architect: Shelley
occupants: middle income
built: 1960

Units clustered around swimming pools and small open areas. Small parking lots convenient to housing units.

11.4 gross acres
7.5 net acres
1050 dwelling units

density: 140 d.u./n.a.

coverage: 16%

f.a.r.: 1.6

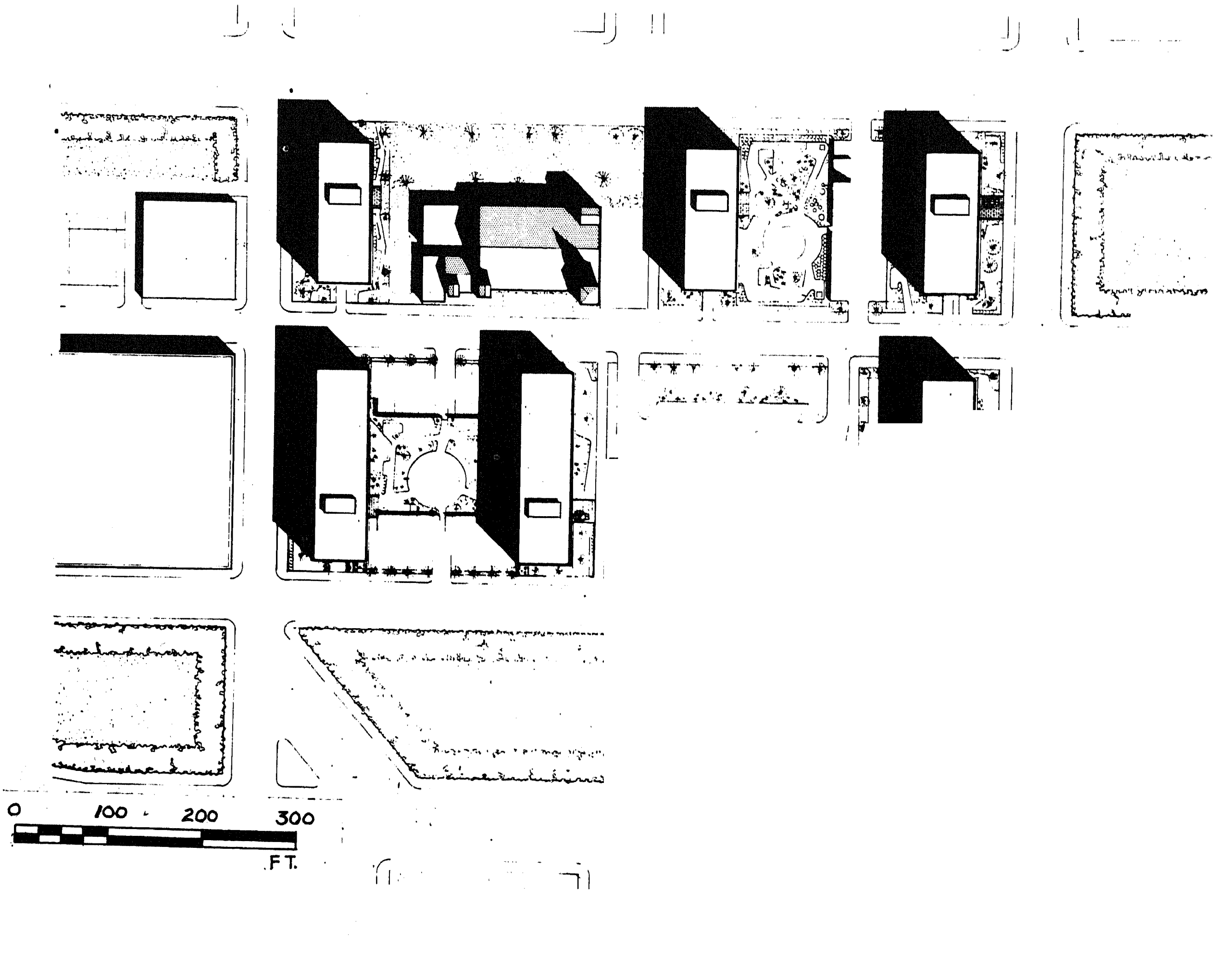
buildings: 6
13 stories
55,000 sq. ft. covered

spacing: 155 feet

parking: 530 spaces underground
185 spaces on the surface
balconies: one per unit
recreation: tot lots
non-residential: shops
churches
distance: adjoins central area

sponsor: URA, FHA
architects: Hellmuth, Yamasaki,
Leinweber, and others
occupants: middle and high income
built: 1960

Project adjoins civic buildings and is the first luxury housing to be built in central city area. New housing built around two existing churches.



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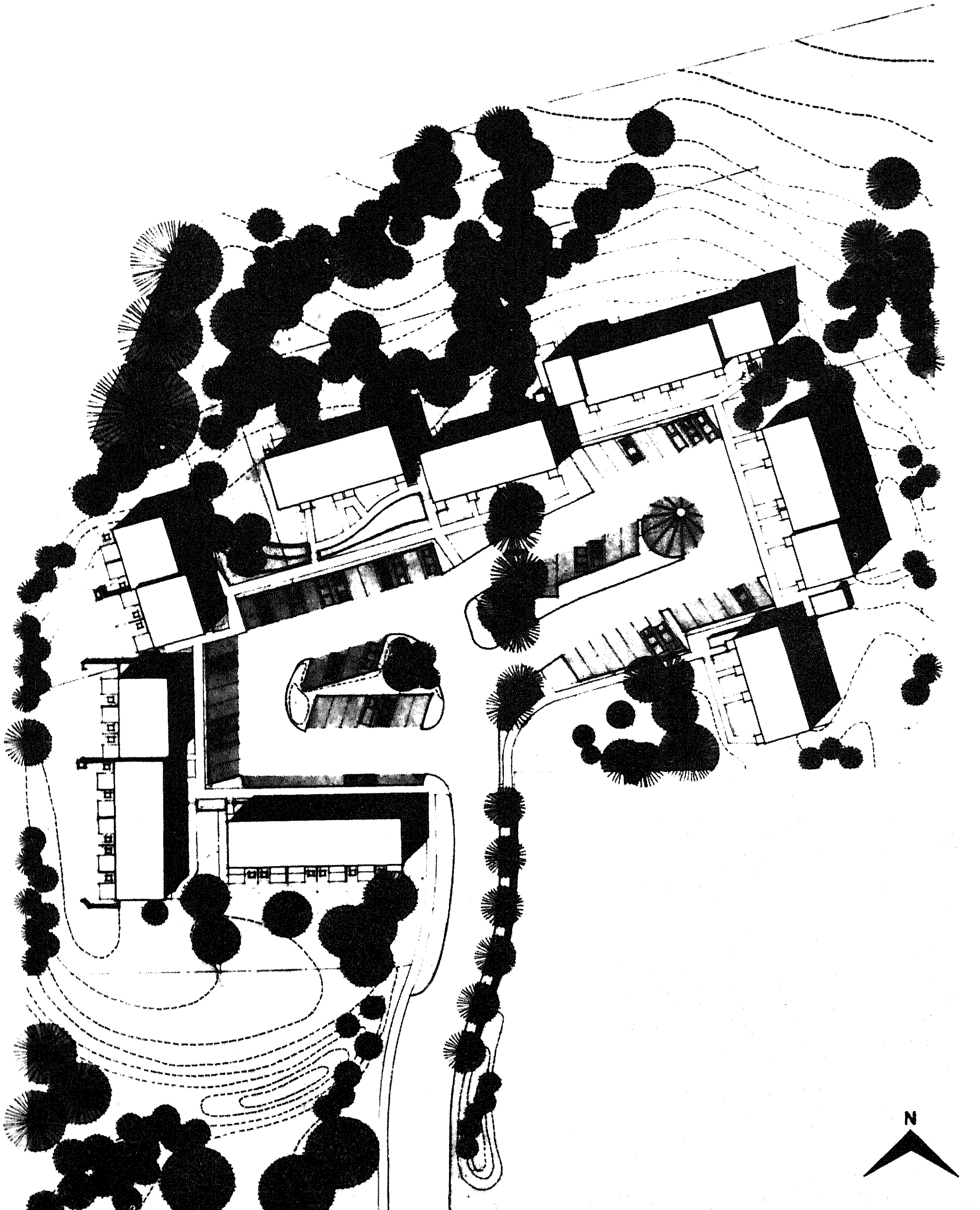
U.S.A.: ST. LOUIS AND ENVIRONS

	6.8 net acres 44 dwelling units
density:	6.5 d.u./n.a.
coverage:	7%
f.a.r.:	0.14
buildings:	8 2 stories 20,000 sq. ft. covered
spacing:	45 feet
parking:	67 spaces
balconies:	none
recreation:	swimming pool adjoins site
non-residential:	none
distance:	10 miles from St. Louis
sponsor:	private
architects:	Montgomery and Anselevicius
occupants:	middle income
built:	c.1960

Generous private outdoor areas in the rear of all dwelling units. Terracing and earth mound landscaping.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U.S.A.: SAN FRANCISCO AND ENVIRONS

ALDEA SAN MIGUEL

UNIVERSITY OF CALIFORNIA MEDICAL CENTER

25.5 gross acres
13 net acres
150 dwelling units

density: 10.5 d.u./n.a.

coverage: 8%

f.a.r.: 0.2

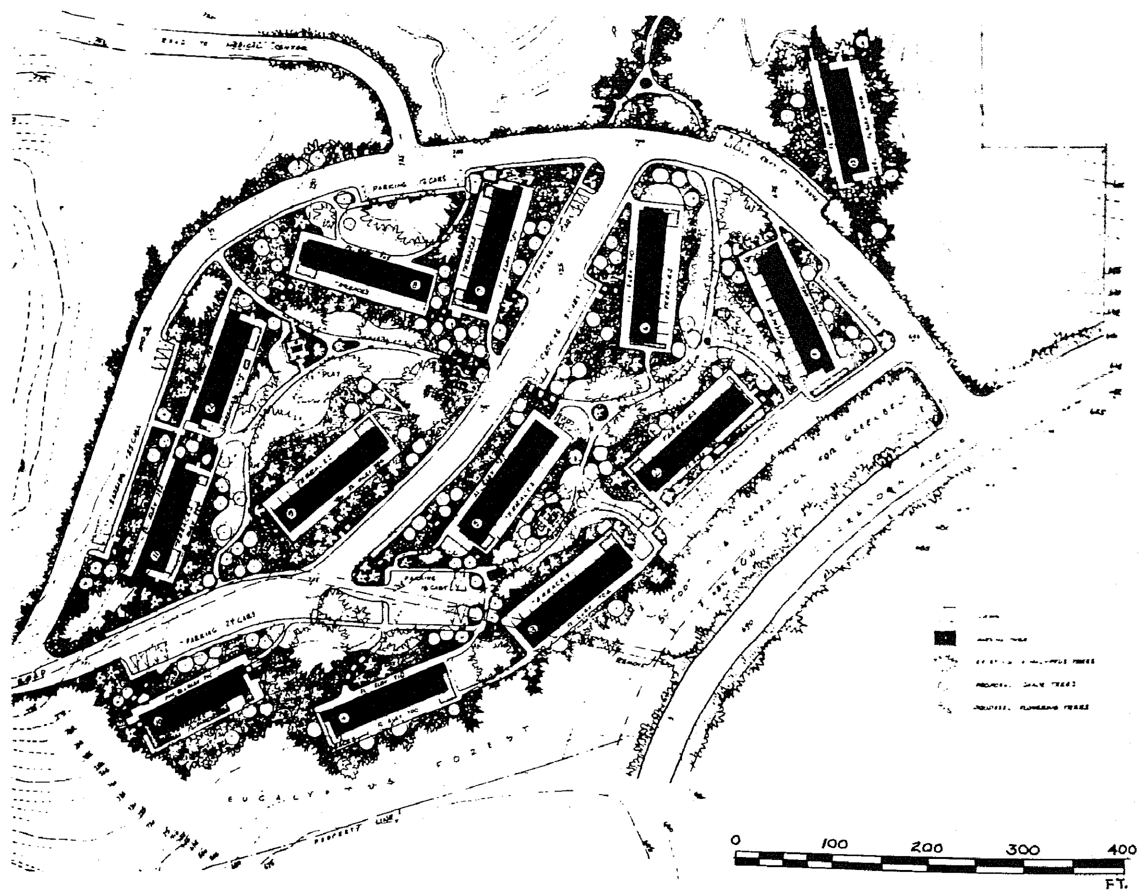
buildings: 13
2 and 2 1/2 stories
45,000 sq. ft. covered

spacing: 80 feet

parking: 150 spaces
balconies: 2nd floor apartments
recreation: play areas
tot lots
non-residential: none
distance: 3.5 miles

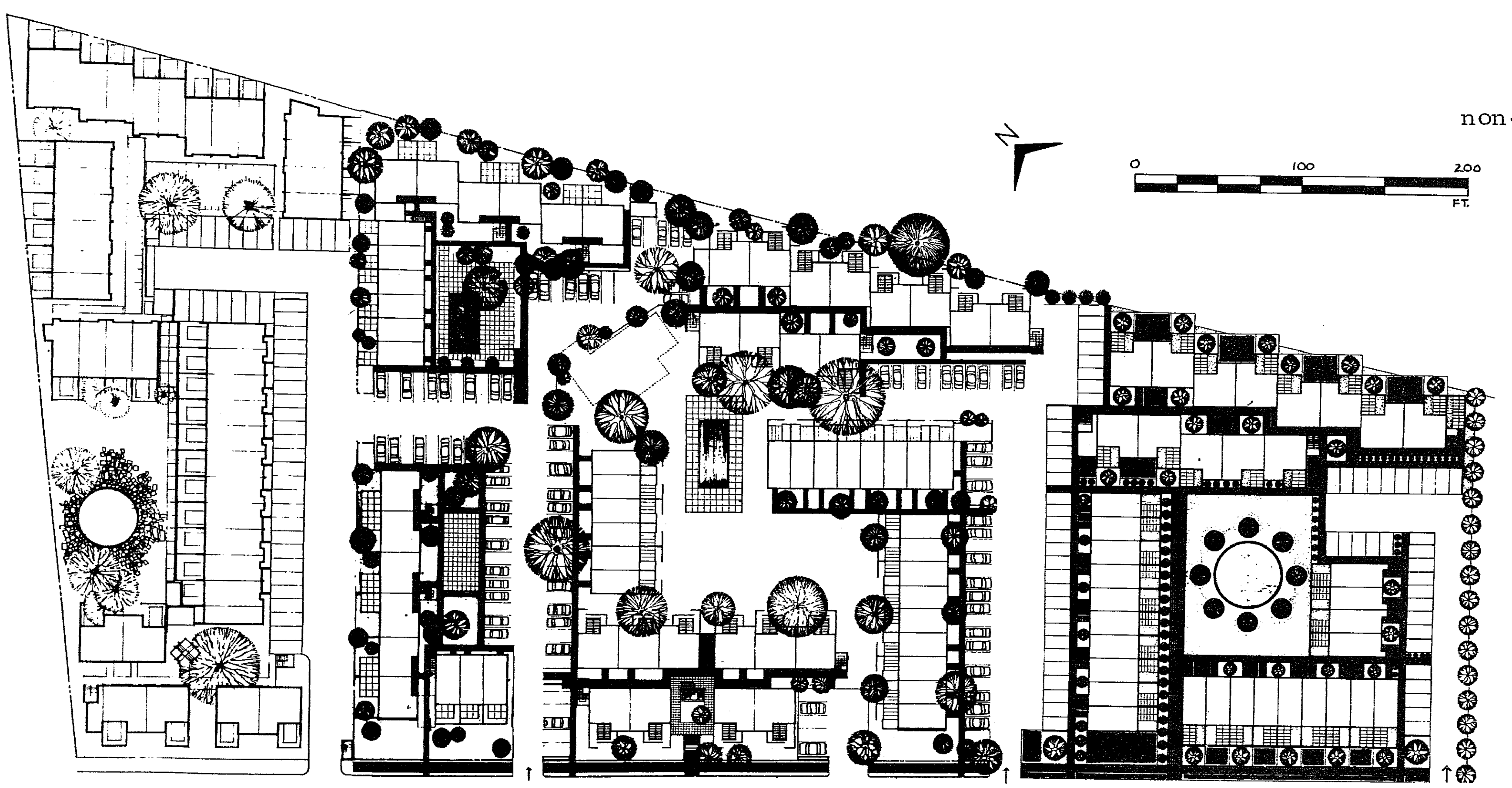
sponsor: public (university)
architects: Rockrise, Clark, and Beuttler
built: 1959

Buildings fitted into the side of a hill which has slopes up to 25%. Terracing creates private outdoor areas and communal play spaces.



CREEKSIDE

WALNUT CREEK, CALIFORNIA



6.5 net acres
190 dwelling units

density: 29 d.u./n.a.

coverage: 25%

f.a.r.: 0.5

buildings: 26
2 story
70,000 sq. ft. covered

spacing: 50 feet

parking: 210 spaces
balconies: 2nd floor apartments
recreation: play areas
swimming pools
non-residential: community building
distance: 22 miles from San Francisco

sponsor: private
architect: Freels
occupants: middle and high income
built: 1960

Private town houses are grouped around swimming pools and play areas. Parking spaces are convenient to, but sheltered from, individual housing units.

EASTER HILL VILLAGE

RICHMOND, CALIFORNIA

21.5 gross acres
15 net acres
300 dwelling units
1150 persons

density: 20 d.u./n.a.
77 per./n.a.

coverage: 21%

f.a.r.: 0.4

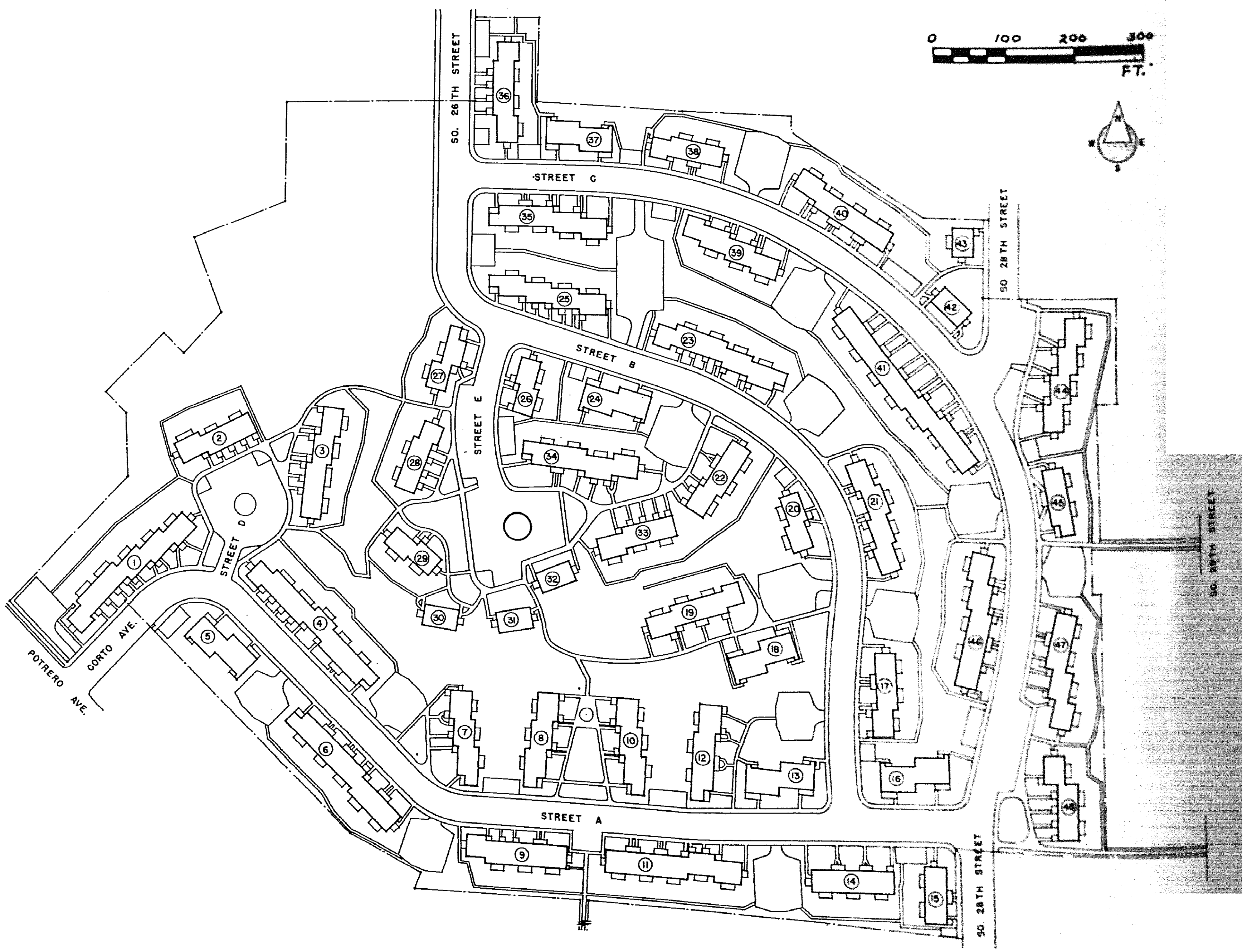
buildings: 48
1 and 2 stories
135,000 sq. ft. covered

spacing: 40 feet

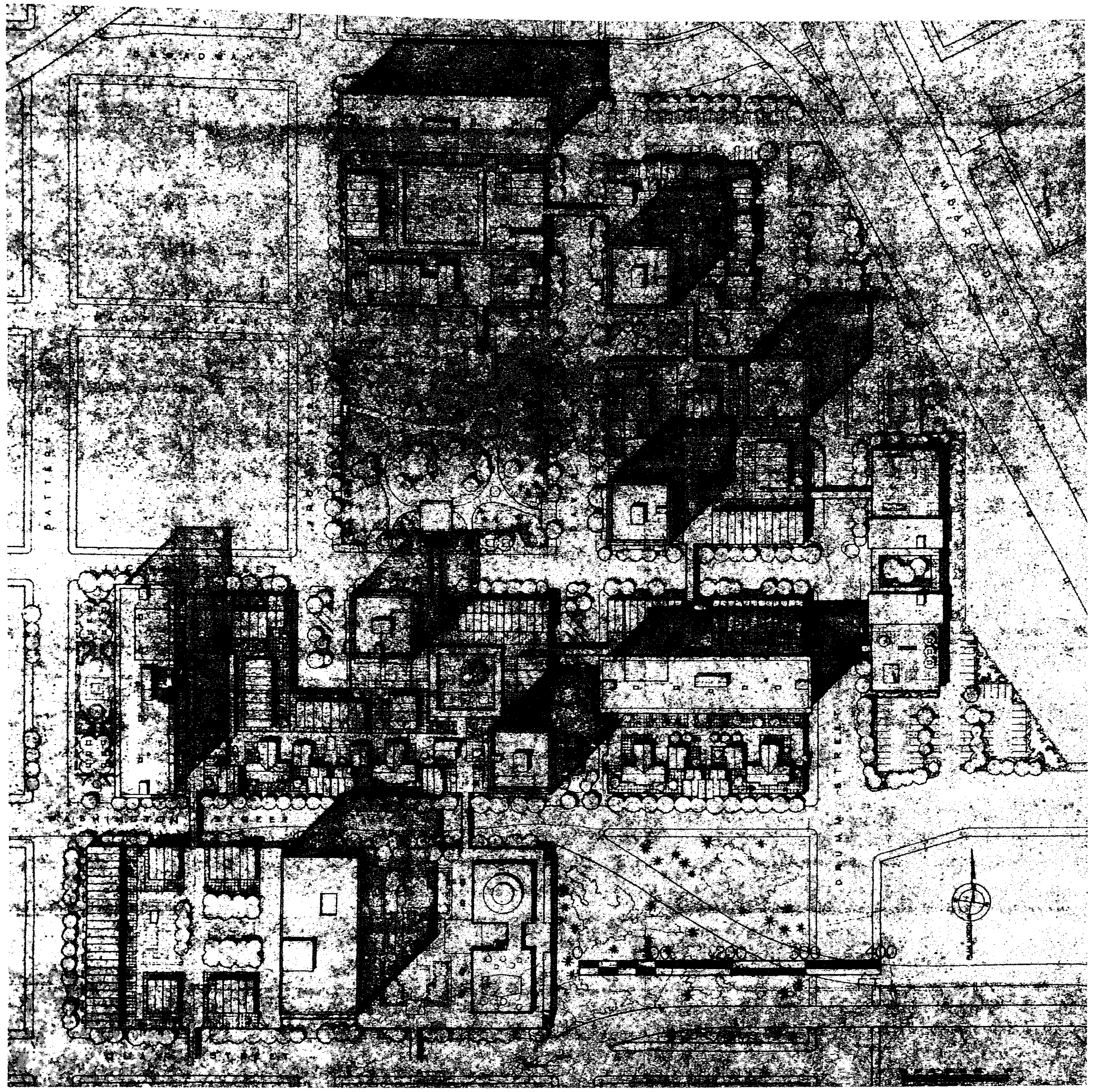
parking: 300 spaces
balconies: none
recreation: play areas
play field adjoins site
non-residential: none
distance: 12 miles from San Francisco

sponsor: PHA
architects: Hardison and DeMars
occupants: low income
built: 1954

Rough site left in natural condition. Buildings staggered for views, privacy, and site interest.



GOLDEN GATEWAY



	45 gross acres 16.5 net acres 2200 dwelling units 5000 persons
density:	135 d.u./n.a. 310 per./n.a.
coverage:	28%
f.a.r.:	3.5
buildings:	8 towers, 21 stories maisonettes, 2 stories 200,000 sq. ft. covered
spacing:	25 feet
parking:	lower floors of towers peripheral lots
balconies:	one per unit
recreation:	play areas tennis courts park
non-residential:	commercial offices etc.
distance:	1 mile
sponsor:	URA
architects:	Wurster, Bernardi, Emmons, DeMars, and Reay
built:	planning stage

Maisonettes on pedestrian concourse above street level. Commercial and pedestrian portions of site are separated.

MARIN CITY

MARIN CITY, CALIFORNIA

32 gross acres
21 net acres
300 dwelling units
1200 persons

density: 14 d.u./n.a.
57 per./n.a.

coverage: 16%

f.a.r.: 0.5

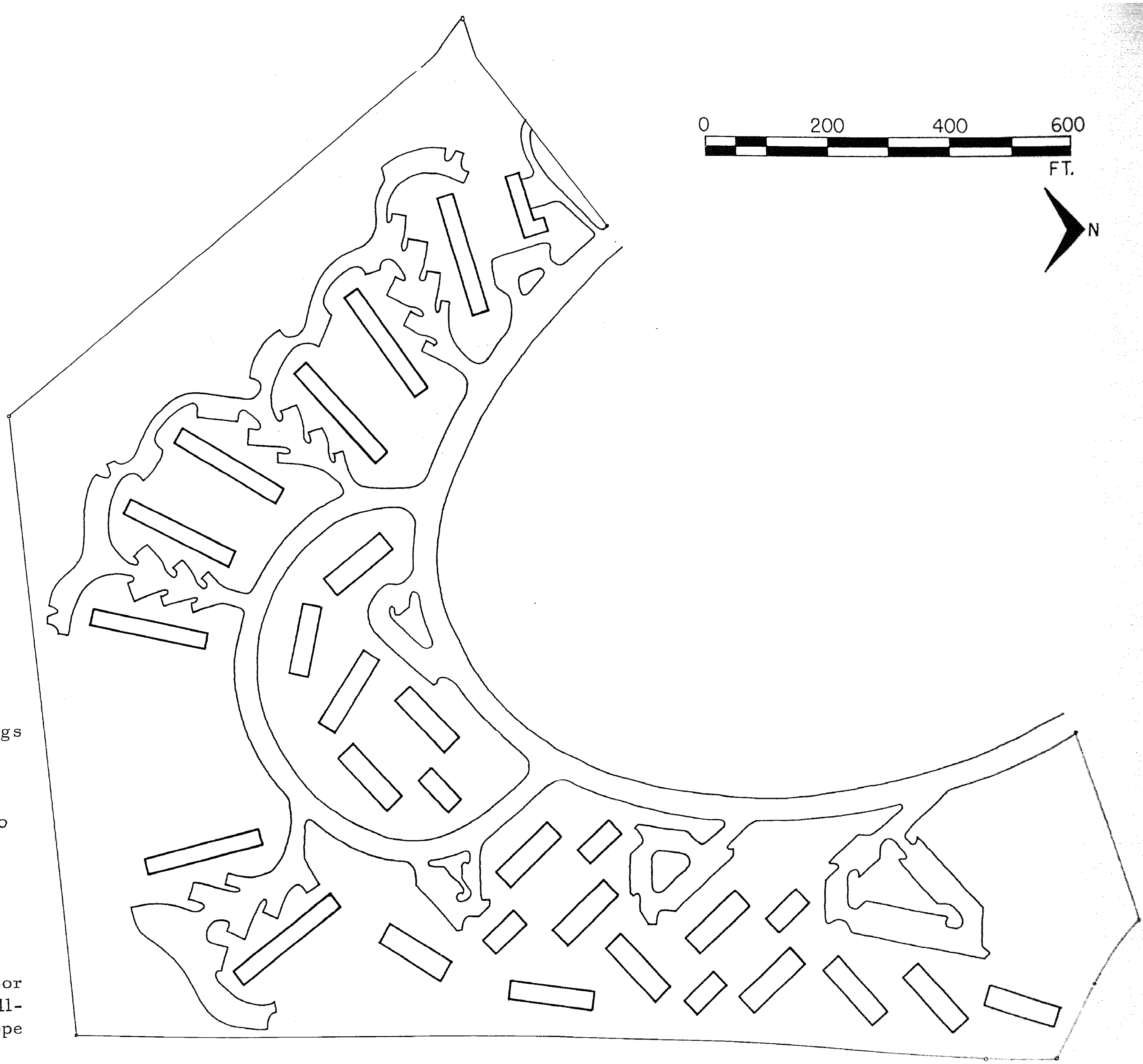
buildings: 28
1, 2, and 5 stories
150,000 sq. ft. covered

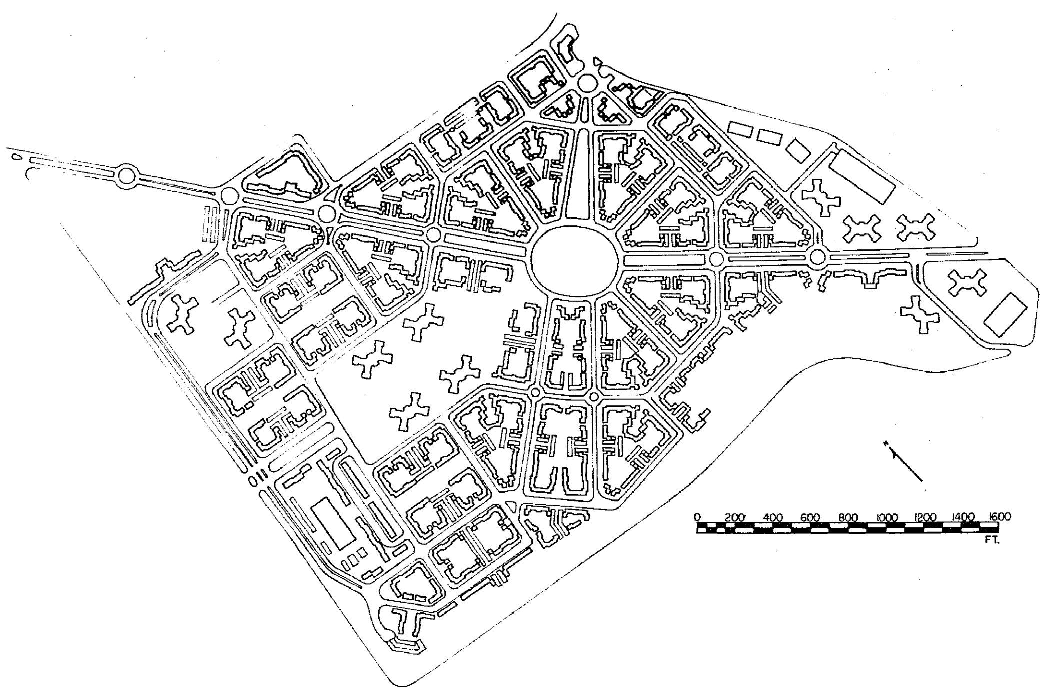
spacing: 50 feet

parking: 350 spaces
balconies: apartments in 5-story buildings
recreation: play areas
tot lots
non-residential: none
distance: 8.5 miles from San Francisco

sponsor: PHA
architects: Warnecke and Green
occupants: low income
built: 1960

Low units, with private outdoor areas, on flat part of site. Taller units perpendicular to slope on higher land.





U.S.A.: SAN FRANCISCO AND ENVIRONS

PARKMERCED

200 gross acres
175 net acres
3483 dwelling units
7650 persons

density: 20 d.u./n.a.
44 per./n.a.

coverage: 25%

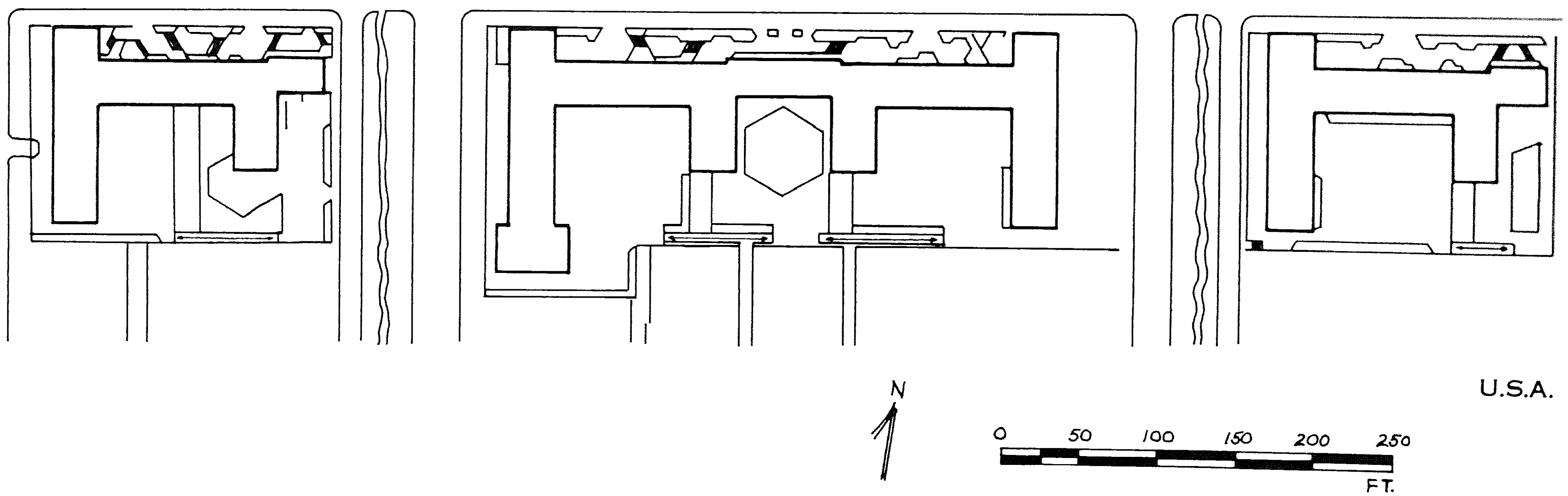
buildings: over 100
2, 3, and 13 stories

spacing: 25 feet

parking: off-street compounds
small lots
balconies: none
recreation: play areas
sports fields
non-residential: shops
recreation building
distance: 5.5 miles

sponsor: private
architects: Schultze, Church, and others
occupants: middle income
built: 1944 and 1950

Two-story units enclose protected open spaces. Tall buildings set in open parts of the site.



U.S.A. SAN FRANCISCO AND ENVIRONS

PING YUEN

2.6 net acres
234 dwelling units
950 persons

density: 90 d.u./n.a.
365 per./n.a.

coverage: 33%

f.a.r.: 1.6

buildings: 3
3-7 stories
37,000 sq. ft. covered

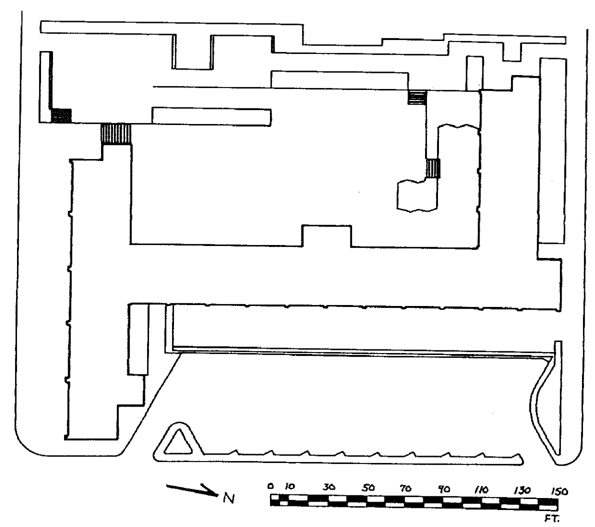
parking: none
balconies: gallery access
recreation: play areas
non-residential: health center
distance: central city location

sponsor: PHA
architects: Daniels and Howard
occupants: low income
built: 1952

Building wings protect play areas.

U.S.A.: SAN FRANCISCO AND ENVIRONS

PING YUEN ANNEX



1.4 net acres
194 dwelling units
520 persons

density: 138 d.u./n.a.
370 per./n.a.

coverage: 33%

f.a.r.: 4.0

building: 12 stories
20,000 sq. ft. covered

parking: 40 cars
balconies: gallery access
recreation: play area
non-residential: none
distance: central city location

sponsor: PHA
architect: Bolles
occupants: low income
built: 1961

Building separates pedestrian and automobile areas. Play area screened from street traffic.

RED ROCK HILL

DIAMOND HEIGHTS

22 gross acres
17 net acres
990 dwelling units

density: 58 d.u./n.a.

coverage: 30%

f.a.r.: 1.5

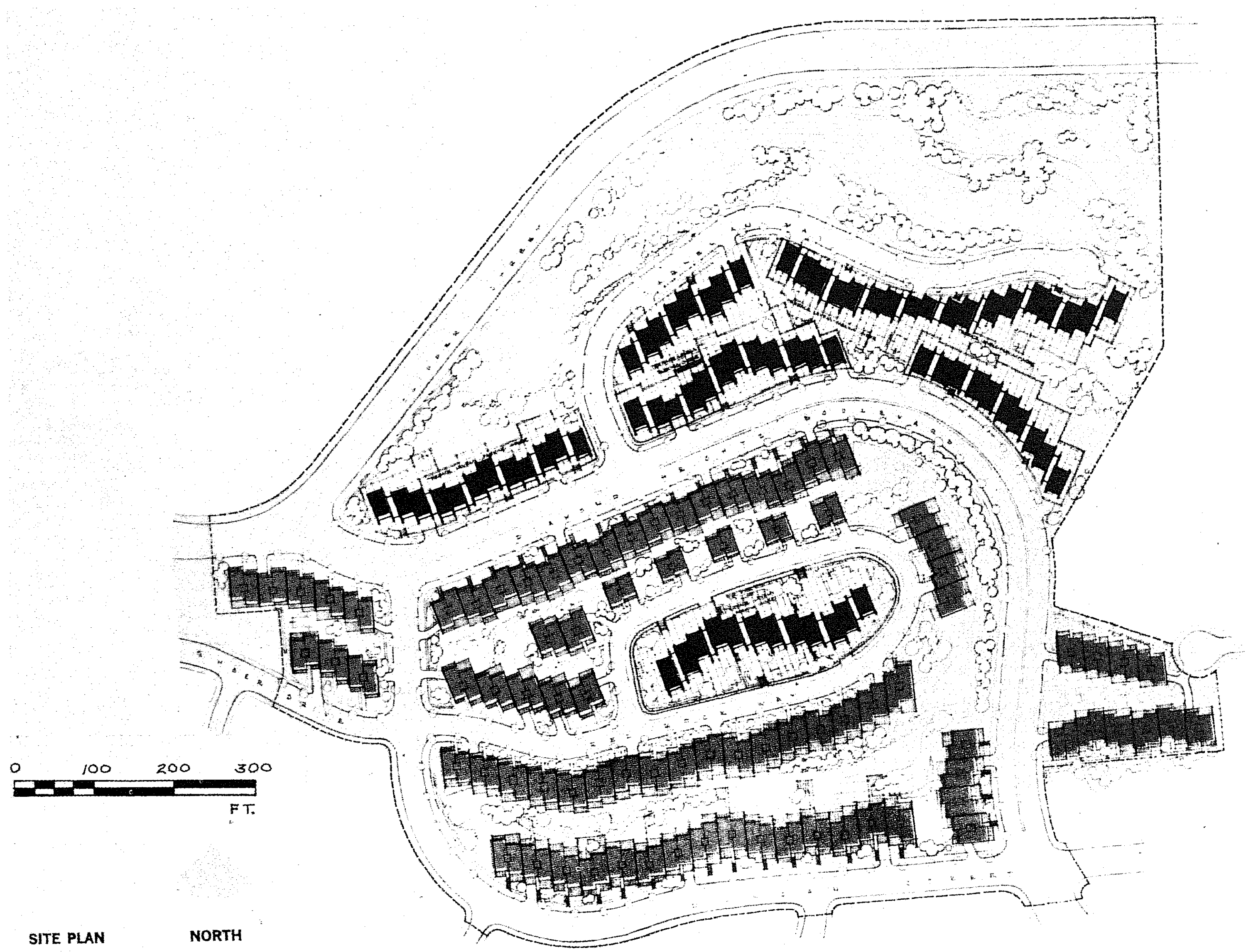
buildings: 22
3 and 7-12 stories
220,000 sq. ft. covered

spacing: 20 feet

parking: almost all under buildings
balconies: two for most units
recreation: play areas
swimming pools
non-residential: none
distance: 3.5 miles

sponsor: URA
architects: Cohen and Levorsen
built: planning stage

Chains of irregular shaped buildings along ridges of steep site. Terraced paved areas around taller units, private outdoor spaces for low buildings.



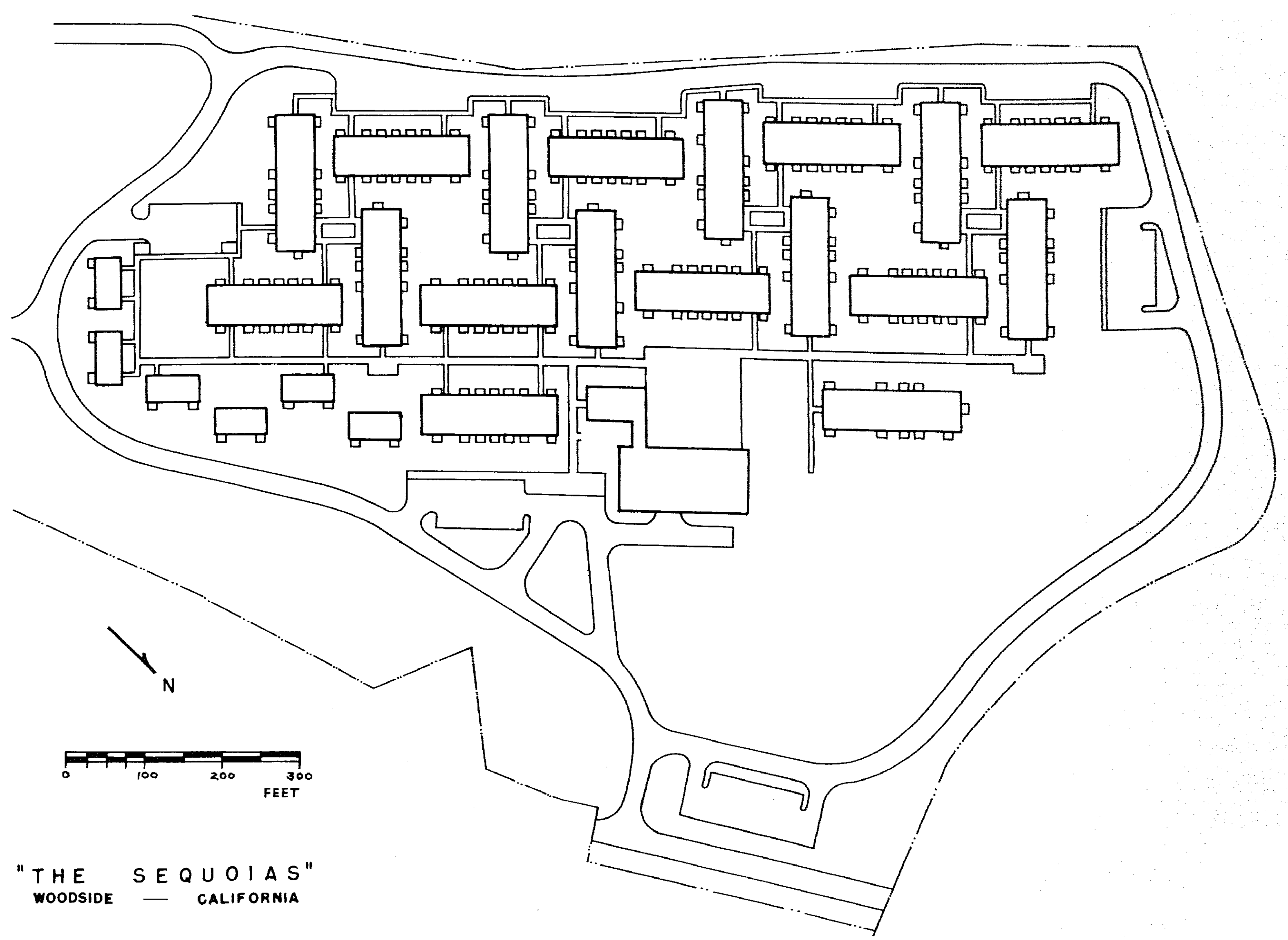
SITE PLAN

THE SEQUOIAS

WOODSIDE, CALIFORNIA

	23 gross acres 17 net acres 228 dwelling units 250 persons
density:	13.5 d.u./n.a. 15 per./n.a.
coverage:	22%
f.a.r.:	0.22
buildings:	24 1 story 165,000 sq. ft. covered
spacing:	25 feet
parking:	lots on site periphery
balconies:	none
recreation:	bowling green putting green croquet court etc.
non-residential:	community buildings
distance:	30 miles from San Francisco
sponsor:	FHA
architects:	Skidmore, Owings, and Merrill
occupants:	middle and high income
built:	1961

Housing for the elderly. Covered walkways connect all buildings.



70 gross acres
33 net acres
2200 dwelling units
6750 persons

density: 67 d.u./n.a.
200 per./n.a.

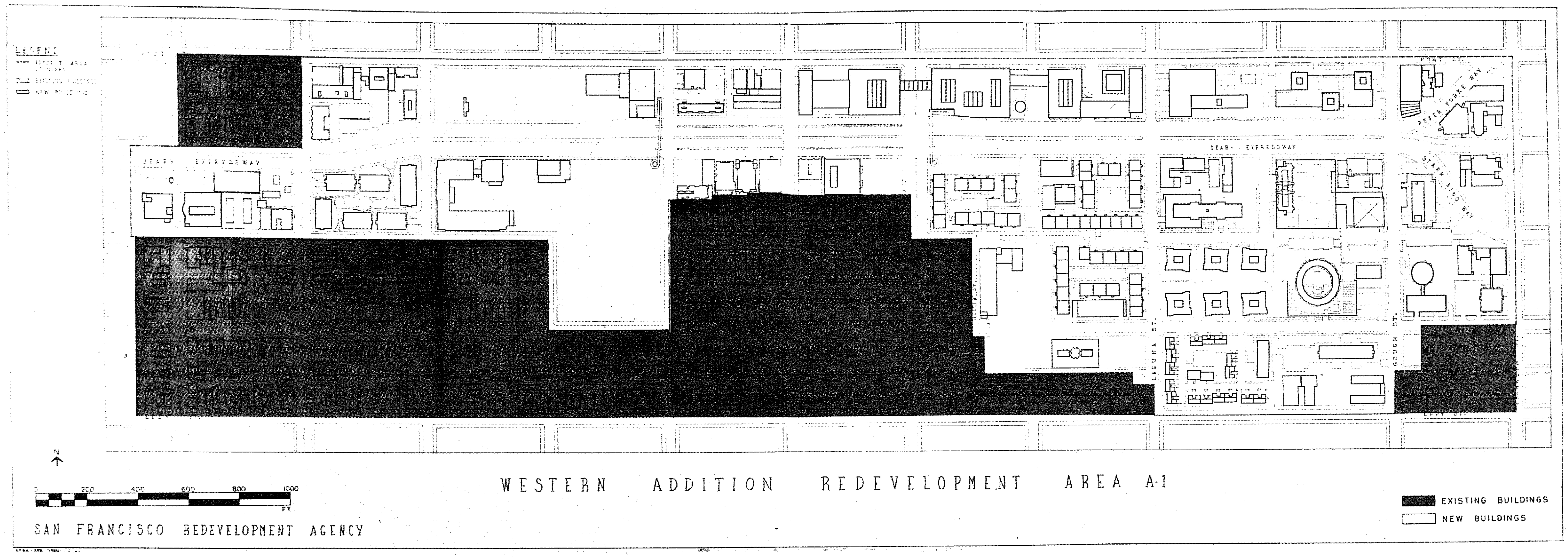
coverage: 10% - 40%

buildings: variety of types and sizes

parking: 3800 spaces
recreation: spaces around residences and schools
non-residential: commercial
institutional
offices
distance: 1 mile

sponsor: URA
architects: 8 major firms
built: planning stage

Large site divided into a number of project areas. A variety of dwelling types and sizes.



APPENDIX TWO : PERSONS WHO CONTRIBUTED TO THE STUDY

The following persons contributed to this study in various capacities. They are listed in alphabetical order according to country and city.

AUSTRIA: VIENNA

Ing. Rudolf J. BOECK
Director
Office of City Development

Mr. G. CONDITT
Architect
Assistant to the Town Planner

Ing. JAGER
Institute for Regional Planning

Dr. Walter JAKSCH
Architect

Dr. KASTNER
Institute for Regional Planning

Dr. Helmut KREPS
Public Relations Office
City Planning Department

Dr. STOHR
Institute for Regional Planning

Professor Dr. R. WURZER
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ACKNOWLEDGMENTS

Note:

Illustration No. 9 - Paris: Vaucresson is the project "Le Belve-dere," also called "Les Jonquilles." The architect is Pottier.

Illustration No. 17 - San Francisco: Diamond Heights is the first section of a large redevelopment project. The housing is built by Eichler Homes.

Illustration No. 32 - Rotterdam: Lijnbaan is the shopping center designed by the architects Van de Broek and Bakema.

Illustration No. 51 - San Francisco: Western Addition, Laguna Heights is by the architects Oakland, Jones and Emmons, ar Anshen and Allen. Sasaki - Walker and Associates are the lan scape architects.

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The plan on page 49 was provided by <u>The Architectu</u> don); on page 53 by <u>Urbanisme</u> (Paris); on pag- 54 <u>Française</u> (Paris); on page 55 by Vincent page 56 by <u>l'Architecture d'Aujourd'hui</u> <u>Arhitekura - Urbanizam</u> (Belgrade); and <u>Forum</u> (New York). The other plans were agencies, architects, and sponsors in tl are located.

All of the photographs are by the author.